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CATALOGUE

OF THE



PATHOLOGICAL MUSEUM,

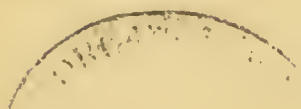
MEDICAL COLLEGE, CALCUTTA.

BY

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Calcutta:

PRINTED AT THE BENGAL SECRETARIAT PRESS.

1881.

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PREFACE.

ON the completion of the present work, the first duty of the author is to record the fact that, but for the encouragement and support given to the undertaking by the Government of Bengal, it could never have been accomplished. When the preparation of a Descriptive Catalogue of the very valuable collection of pathological specimens in the Museum of the Medical College was proposed, and the plan of the work submitted to Sir Ashley Eden, His Honor was pleased to accord his sanction to the undertaking, and to issue orders for its publication by the Secretariat Press; moreover, during the progress of the work, the author's efforts to do justice to it have been keenly stimulated by the kindly interest taken in it by the Lieutenant-Governor.

The Pathological Museum of the Calcutta Medical College was founded, about the year 1839, upon the collection of morbid specimens which belonged to the old Medical and Physical Society of this city.

It was greatly added to by Professor Allan Webb, one of the earliest curators, whose very valuable treatise, entitled *Pathologia Indica*, based upon his own personal researches, marked an important era in the history of Medical Science in India, and which, by its extensive learning, may be said to have fairly established for its author the right of being regarded as the pioneer of Indian pathology.

Many of Professor Webb's preparations have, unfortunately, now been lost to the collection, chiefly owing to the changes which, in the course of time, are but too apt to occur in such a climate as that of Bengal. A few of them, however, still remain, and these have been carefully guarded, not less on account of their historical interest than for their intrinsic value.

The chief contributors to the Museum, of late years, have been the successive Curators, and the Medical Officers constituting the Staff of the Calcutta Medical College Hospital; but many interesting and valuable specimens have also been received from



Medical Officers in Civil and Military employ throughout the Bengal Presidency.

The past history of the Museum is associated with the names of many distinguished members of the profession in India, such as those of Mouat, Edward Goodeve, Jackson, O'Shaughnessy, Herbert Baillie, Norman Chevers, Chuckerbutty, Charles, Fayrer, and Partridge.

With these time-honoured names it is also necessary to mention those of two Native Teachers of this Medical School in former days—Rai Ram Narain Das Bahadoor (whose collection of vesical calculi is of undoubted value), and Moulvie Tameez Khan Bahadoor, whose sound and extensive knowledge of pathology has always been zealously devoted to the improvement of this Museum.

For a long time the want of a suitable catalogue was much felt. In 1865, Dr. Joseph Ewart published a descriptive catalogue of 1,322 preparations. This work was, for some years, a useful source of reference.

During the temporary absence of Dr. Ewart, in Europe, in 1864-65, the late Dr. J. A. Purefoy Colles was in charge of the Museum. This excellent anatomist and most careful observer contributed largely to the collection; and his many descriptions are, as might have been expected, accurate, lucid, and of real scientific value.

Dr. Ewart resumed charge of the Museum in 1865, and retained the office until relieved by the present Curator in the year 1872.

During the first two years of the author's incumbency, his time was fully occupied in the preparation of a course of lectures on Pathology and Morbid Anatomy, and in the performance of the duties devolving on him as Pathologist to the College Hospital, and Lecturer in the Medical School,—it was not, therefore, until the year 1874 that a complete revision of all the preparations in the Museum could be undertaken.

This work has now occupied the author's attention, and all his available leisure, for the last seven years.

Had his duties been less multifarious, and had there not been an entire absence of skilled assistance in the Museum, this Catalogue might have appeared sooner; but the delay in its publication has, it is hoped, added to its completeness and value.

The Catalogue, as it now stands, has been arranged in accordance with that most familiar to the author; viz., the Pathological Catalogue of the Museum of St. George's Hospital, London (the joint production of his esteemed masters Dr. John W. Ogle and Mr. Timothy Holmes). The only modifications that have been introduced are such as seemed desirable in dealing with a large number of morbid specimens not commonly met with in European museums.

With regard to the arrangement of this volume,—in the table of contents will be found the different “series” in which all the specimens have been separately placed and described. Each “series” has its own classified “index” of preparations; and at the end of the work there is a complete “general index” to the whole of its contents. It is hoped, therefore, that reference to any part of the volume, or to any subject illustrated by specimens in the Museum, will be found easy, not only to the Professors, but to the most junior student.

The Catalogue comprises the description of nearly three thousand (2,890) morbid specimens, exclusive of a series of Casts, Wax Models, and Pathological Drawings, forming Appendix A, and numbering 249.

Care has been taken, whenever it was possible, to place on record the “life-histories” of the preparations preserved, as calculated greatly to enhance their value; and, with the same object, references have also been furnished to the Mortuary Records of the College Hospital. These Records have now been systematically collated since the year 1873.

It may be mentioned that the Museum is particularly rich in certain directions—

- (a.) Very valuable specimens of diseases affecting the Digestive organs (Series IX), specially illustrative of the disorders most prevalent in tropical climates.

- (b.) Morbid lesions of the Heart and Blood-Vessels (Series VI).
- (c.) A large, varied, and excellent collection of preparations of Tumours (Series XVII).
- (d.) A comprehensive and valuable collection of Vesical Calculi.

By recently improved methods of sealing the jars (which need not here be particularized), it has been found possible to preserve, for years, the specimens which they contain without the loss of the spirit, by evaporation, which has hitherto proved so detrimental to the preservation of pathological preparations in this country.

There remains to be considered one very important point, viz., to what degree such Descriptive Catalogues as the present, and indeed how far Museums generally, are to be considered of real value to the conscientious student of science.

It is hardly possible to express an opinion on such a question as this more forcibly than has recently been done by Sir James Paget, whose utterances regarding everything bearing on Medical Science command the greatest respect in all parts of the civilized world. "It is said indeed by some," he observes,* "but chiefly I think by those who desire to find reasons for *not* studying—that specimens of diseased structures are so altered in their preparation for a museum, that they are quite unfit for the teaching or the study of pathology. The same objection might be made to the study of botanical specimens in an herbarium. In both cases alike, the changes produced in preparation are so far uniform that any one accustomed to recent specimens (and no others should study either herbaria or pathological museums) can allow for them, or 'discount' them. Just as an anatomist can discern, in a recent specimen of disease, the healthy structure, so—but often much more clearly—can the pathologist or any careful student discern, in the prepared specimen, the chief characteristics of the disease. Or, as none

* "*Suggestions for the making of Pathological Catalogues*," a Paper read at the British Medical Association Meeting at Cambridge, 1880. *Vide British Medical Journal*, 11th December 1880, p. 911.

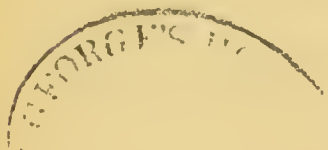
know better the use of dissecting dead and decaying bodies than those who operate upon the living. so may all find, when they are studying at the bed-side, the most potent help in their memories of what they have seen in the museum. Or, even without argument, it may suffice to answer those who deprecate pathological museums and catalogues, that they who study in them carefully do find them very useful."

In this opinion the author fully concurs, and he hopes that this volume may in some measure assist all earnest students, into whose hands it may fall, to a deeper and more precise knowledge of the laws of General Pathology, and of the nature of diseased structures—than which no knowledge can be said to be of more importance in its relations to Practical Medicine and Surgery.

MEDICAL COLLEGE;

J. F. P. McCONNELL.

Calcutta, February 1882.



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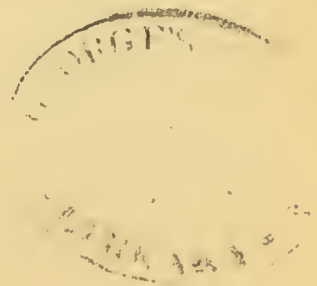
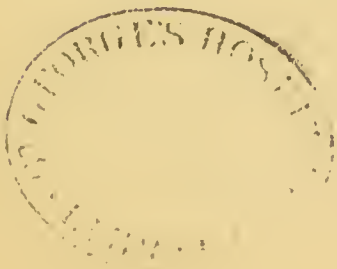
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CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART I.
THE INJURIES AND DISEASES OF BONE.

SERIES I AND II.



SERIES I.

FRACTURES AND DISLOCATIONS.

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1. Extensive fracture of the bones forming the superior region of the skull, with diastasis of the coronal, sagittal, and lambdoidal sutures. "The subject of this was Private John McDougall, aged 27 years, resident in India five years, stout, and of sober habits. The injury was the result of a fall from his horse. Was admitted into hospital in a partially insensible condition; could not answer questions, but pointed to his head as the seat of injury. Pupils dilated; pulse slow and intermitting; respiration laborious; countenance pale; skin warm. There is a mark of contusion on centre of parietal bone. On examination there appears to be a fracture across the occipital bone, with effusion beneath the scalp. He is very restless, and threw up about four ounces of coagulated blood. No hæmorrhage from nose and ears. The patient became gradually more and more insensible, the breathing stertorous and slow, and he expired about an hour after the receipt of the injury. On post-mortem examination, an immense quantity of dark-coloured blood was found extravasated beneath the scalp, an extensive fracture of the occipital bone, the lines intersecting each other, and extending into both parietal bones, and running down the frontal bone into the left orbit. The left half of the coronary, the sagittal, and occipital sutures were entirely separated." The occipital bone seems to have been trephined, and the circle of bone thus removed is preserved with the skull, but there is no reference to this operation given by Dr. Mouat (H. M.'s 15th Hussars, Bangalore, 26th February 1846), whose description of the case is above quoted.
2. Fracture of the external and internal tables (the latter being most extensive) of the left parietal bone, just over the situation of the middle meningeal artery, and complete diastasis of the coronal suture. From a native dacoit. (Ewart.)
3. Fracture transversely across the whole of the right, continued $2\frac{3}{4}$ inches into the left parietal bone, with depression of the inner table. The fracture of the outer table of the left parietal bone has been repaired by bony union, and part of that in the right parietal has been all but bridged by osseous tissue. A good deal of new bone has also been deposited around the depressed portion of the inner table. (Ewart.)
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the origin of the pneumogastric. (Ewart.) Portions of the lambdoid and sagittal sutures have separated as a direct result of the injury. (*Presented by Dr. Mountjoy of Akyab.*)

6. Skull of a native, showing a clean linear fracture running obliquely across the right temporal bone, just above the superior root of the zygoma. The principal fracture, however, is on the left side, through the frontal, across the anterior superior angle of the parietal, and through the sagittal suture, to near the posterior superior angle of the right parietal. There is an opening made by the trephine a little below the line of fracture in the left parietal. The latter, it will be observed, crosses the groove for the posterior bifurcation of the middle meningeal artery, and this vessel was probably severed, as a large quantity of extravasated blood was found at the base of the skull, "pressing upon the medulla oblongata." (*Presented by Professor Allan Webb.*)
7. A portion of the parietal bone, showing fracture and depression of the inner table. (Ewart.) (*Presented by Professor Allan Webb.*)
8. Calvarium of a native admitted into hospital, with a depressed fracture in the left temporal region, and with symptoms of compression. The depressed bone was elevated after the application of the trephine, but death occurred notwithstanding, within 48 hours after admission. The preparation shows the aperture made by the trephine, and the remains of the fractured surface. The elevated fragments are, however, wanting, and also much of the inner table immediately below the seat of injury. The latter is at the anterior border of the left parietal bone, one inch below the point of junction of the sagittal with the left half of the coronal suture. The fracture was apparently much comminuted, involves the adjacent portion of the frontal bone, and is continued downwards in a linear form towards the anterior inferior angle of the parietal. It thus divides several grooves for the lodgment (on the inner surface of the skull) of branches of the middle meningeal artery, and was, as a fact, associated with much intra-cranial hæmorrhage and brain-compression therefrom. The fracture has the appearance of having been inflicted by a blunt, but heavy, instrument. The bones of this skull generally are unusually thin.
9. Fracture of the right parietal bone, and separation of the coronal suture, with exudation of lymph on the surface and between the membranes of the cerebrum, the consequence of a fall. (Ewart.)
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bone could be elevated. The dura mater then bulged into the opening ; its surface was seen to be covered with lymph and pus, and the diploë infiltrated with the same. The patient ultimately succumbed to acute cerebro-meningitis. The surface of the left hemisphere of the brain (corresponding to the injury) was found coated with purulent exudation at the *post-mortem* examination.

11. Comminuted, depressed fracture of the skull. "The left parietal bone is literally smashed to pieces over a surface about seven inches in circumference at its inferior part. There are seven or eight fragments, all of which are more or less depressed ; but at the upper part the depression is abrupt, at the edge of the sound bone, to the extent of very nearly half an inch. A long open fissure extends from the smash to the inferior posterior angle of the bone. On the centre of the forehead there is a starred fracture, depressing the fragments of the internal plate one-eighth of an inch ; and at the superior posterior angle of the *right* parietal bone there is an excellent example of a depressed fracture of the inner table alone, there not being the slightest mark externally on the skull, but at the *post-mortem* examination there was an incised wound of the scalp penetrating to the bone at a corresponding position. A considerable amount of blood was extravasated in the position of the smash, both upon and beneath the dura mater, which had been penetrated, but the central ganglia were uninjured." From a native boy, aged 13. He had a quarrel with a man about some mangoes, and the man battered in his (the boy's) skull by means of a piece of angular quartz rock, about the size of an infant's head. The boy became comatose immediately upon receipt of the injury, but lived for 23 hours. (*See further, Indian Medical Gazette, January 1875, page 8.*) (*Presented by E. A. Birch, Esq., F.R.C.S., &c., Civil Surgeon, Hazaribagh.*)
12. A comminuted and depressed fracture of the left side of the frontal bone, extending backwards as a linear fissure, about two inches in length, into the left parietal. A trephine had apparently been applied over the *right* parietal prominence, but the skull not perforated. The subject was a Mahomedan, who received at the same time severe injuries to the upper part of the spine. "He lived nine days." (*Presented by Dr. Mountjoy of Akyab.*)
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broad. (Ewart.) No history. (*Presented by* Professor Allan Webb.)

16. The vault of the skull from a native male subject in the dissecting-room, showing perforation of the same by a slender iron nail. A small opening is seen in the frontal bone in the mesial line, about an inch above the frontal sinuses. The inner opening is in the longitudinal sinus. A glass rod indicates the exact situation. There is an old cicatrix in the skin of the forehead corresponding to the injury in the bone below, and on dissecting this off the pericranium is seen, also thickened and slightly depressed or puckered over the small aperture. The nail was found fixed thus at one end to the bone, the other lying free in the longitudinal sinus. (*Presented by* Assistant Surgeon Chunder Mohun Ghose.)
17. Calvarium of a Mahomedan female, aged 40, who fell from a height of 12 feet on to her forehead, and was brought into the hospital in a state of insensibility. A compound punctured fracture of the frontal bone in the median line was found, with considerable depression of the inner table. An oval-shaped aperture is seen in the preparation, representing the state of parts after elevation of the depressed fragments. It is rather larger than an eight-anna (shilling) piece.
18. A depressed fracture of the frontal bone, situated a little below and to the left of the corresponding frontal eminence. A rounded aperture is seen in the outer table, about the size of an eight-anna (shilling) piece. Three large fragments of this table are much depressed, and the inner table to even a greater extent. The skull generally is remarkably thin. The fracture was produced, it is believed, by a blow from a "dhaö."
19. Calvarium of a native (Hindu, male), aged 25. Exhibits extensive transverse fracture with depression, caused by a brick cornice from a two-storied house falling on his head. There are three transverse fractures of the frontal bone (the posterior involving also the left parietal)—two of which include between them an oval piece $7\frac{1}{2}$ inches in circumference, 3 inches in breadth, and 2 inches in length, which is much depressed. (Colles.) On the left side the fracture extends along, and partially involves, the coronal suture, approaching the base of the skull.
20. Extensive fracture of the bones of the left side and base of the skull and face, viz. of the malar, nasal, nasal process of the superior maxillary, condyloid process of the lower jaw, and of the temporal, and inferior and anterior part of the parietal bones, leading to rupture of the middle meningeal artery. In the temporal the fracture is comminuted, and the alar is separated from the mastoid portion of the bone, and the petrous portion also transversely fractured. Further, there is a fracture of the occipital, complete separation of the petro-occipital articulation; fracture of the body of the sphenoid, and comminuted fracture of the orbital plate of the same. (Ewart.) The subject, a Hindu labourer, fell into a pucca drain while carrying a heavy load of sugar,

and thus sustained all these injuries. He was brought to the hospital quite insensible, but recovered consciousness, and was even able to sit up and answer questions after an interval of about 12 hours. This, however, was quickly succeeded by recurrent insensibility, stertorous breathing, with dilated pupils, and gradually advancing coma, and he died about 29 hours after the accident. At the *post-mortem* examination "the left middle meningeal was found torn through, and a large quantity of blood extravasated between the dura mater and brain, immediately opposite the temporal region."

21. A portion of the left side of the skull, showing a fracture running obliquely across the upper part of the temporal fossa, extending from the external angular process of the frontal to about an inch in front of the temporal ridge of the temporal, with a large oval piece, completely separated and depressed. It is composed of the anterior inferior angle of the parietal, and of that portion of the frontal which enters into the construction of the temporal fossa. The line of fracture also passes inwards from the external angular process across the orbital plate of the frontal, and the cribriform plate of the ethmoid to the median line, the bone all along this line of fracture being comminuted. The patient, a native coachman, received a kick from a horse. He was brought to the hospital in an insensible condition. There was a wound about an inch and a half in length at the upper and anterior part of the left temporal region; profuse bleeding from the nose; great ecchymosis and swelling of the ocular conjunctiva and eye-lids, with dilatation of the left pupil; and the breathing was stertorous. The oval depressed portion of bone could be felt when the finger was introduced into the wound. It was elevated, and almost immediately the stertor stopped. The patient, however, remained insensible; right hemiplegia soon supervened, and he died on the third day after admission.
22. Extensive fracture of the occipital and parietal bones, with depression of some of the fragments, separation of the sagittal suture, and wound of the longitudinal sinus, a little above the Torcular Herophili. The wound is marked by a glass rod in the preparation. A large coagulum was found between the brain and dura mater, the blood having passed through a rent in the latter below the left lateral sinus. This is also indicated by a glass rod. The patient, a woman, was found murdered. (Colles.) (*Presented by* Dr. R. T. Lyons, 20th P. N. I., Rawal Pindi.)
23. Calvarium of an adult Musalman, who was brought in (to the hospital) insensible, having fallen from a height of twenty feet. He died six hours after admission. There is separation of the posterior third of the sagittal suture, and from the point of junction of the latter with the lambdoid suture, a fracture extends downwards and to the right, through the squama occipitis. It reached the foramen magnum, but the base of the skull was not obtained. (Colles.)

24. A portion of the skull, showing the result of a sword-cut in the occipital region. About two-thirds of the external lamina of the occipital bone, with a portion as large as a half-crown piece of its whole thickness, have been removed, laying bare the diploë, and producing a perforation, which occupies the inner two-thirds of the right cerebellar fossa. The margins of this opening are sharp and abrupt; those of the cut through the external table, bevelled off and smooth. The slice of the occipital bone removed by this sword-cut was found in the flap of the severed scalp, and measured seven inches in circumference. Through the opening in the skull a hernia of the cerebellum protruded during life. No loss of consciousness, but peculiar "jerking" of the limbs ensued immediately upon the receipt of the injury (*i.e.* loss of co-ordinating power). On the fourteenth day symptoms of stupor supervened, which gradually deepened, and the patient died comatose on the eighteenth day.

At about the centre of the right parietal bone, running parallel with the sagittal suture, is another sword-cut in the bone, two inches in length and one-fourth of an inch deep. It has passed through the external table of the skull, exposing the diploë, but does not penetrate.--From a native woman, who was attacked by her husband with a sword with the view to decapitation. (*See further Indian Medical Gazette*, January 3rd, 1875, p. 7.) (*Presented by* E. A. Birch, Esq., F.R.C.S., &c., Civil Surgeon, Hazaribagh.)

25. Extensive fracture of the base of the skull, involving all three fossæ. The following are the more important injuries:—(1) a fracture through the whole length of the petrous portion of the right temporal bone, opening into the external auditory meatus; (2) a separation of the apex of the petrous portion from the rest of the temporal bone (right); (3) a fissured fracture, extending obliquely backwards and inwards from the posterior lacerated foramen to the foramen magnum, passing completely through the occipital bone just behind the right condyle; (4) a vertical fracture through the left margin of the foramen magnum immediately above the left condyle, but only partially involving the latter; (5) a comminuted fracture of the right lesser wing of the sphenoid and adjacent portion of the orbital plate of the frontal bone.--From a European soldier, A. W., aged 28, who fell into the street, while drunk, from the second story of a tavern, and was brought to the hospital perfectly insensible, cold, and collapsed. "No external wound could be detected, but there was oozing of blood from the right ear." After an interval of about four hours, he partially regained consciousness, and was able to answer questions put to him relative to his name, age, occupation, the accident, &c. In twelve hours' time he was quite sensible. "Complained of severe pain in the head, right shoulder, and arms;" was restless and irritable. Paralysis of the right side of the face was now noticed. On the following day was still sensible, "thirst urgent; stomach irritable; exceedingly rest-

less;" towards evening drowsy. This last symptom gradually increased, and he died comatose on the fourth day, or 89 hours after the receipt of this very severe injury.

26. A portion of the right side of the skull, showing a linear fracture or fissure through the middle of the petrous portion of the temporal bone, extending from the jugular fossa posteriorly, across the superior surface of the bone, to the groove leading to the hiatus Fallopii on its anterior surface. The fracture is distinctly seen to communicate with the auditory canal. No history.

27. Fracture of the skull, affecting chiefly the base. In the left middle fossa there is seen a transverse fracture running along the anterior surface of the petrous portion of the temporal bone, separating it from the great wing of the sphenoid, and being a direct continuation of a vertical fracture through the middle of the squamous portion of the left temporal bone. This fracture opens into the auditory canal, and completely separates the Glaserian fissure. The vertical fracture above indicated has a transverse fissure running forwards from it, about two inches in length, through the squamous portion of the temporal, three-fourths of an inch above the zygoma. Returning to the base of the brain, there is a complete transverse fracture of the body of the sphenoid immediately behind the sella Turcica, and linear fissurings of the right and left orbital plates of the frontal bone. The patient, an aged Hindu, was said to have been "knocked down by the shaft of a buggy coming forcibly against his person while being furiously driven through the streets." He was cold and collapsed, but not quite insensible when brought into the hospital. The breathing was oppressed, but not stertorous, and he could answer questions when put in a loud voice. There was oozing of blood from the left ear. Gradually insensibility, with stertorous breathing and paralysis of the left side of the face, supervened, but the patient lived for a little over 60 hours after the receipt of these severe injuries.

28. Fracture of the base of the skull "caused by a blow of the fist." (*Presented by Professor J. Fayrer, M.D., &c.*) No other history preserved. The fracture extends through the right half of the occipital bone, and across the entire thickness of the petrous portion of the right temporal, commencing near the right middle lacerated foramen. It is traced backwards across the petrous portion of the temporal, the right jugular fossa, lateral sinus, and cerebellar fossa, and then upwards and inwards to terminate in a linear fissuring only of the inner table at the lambdoid suture, a little to the right of the junction of the latter with the sagittal suture.

29. A vertical fracture through the body of the lower jaw of a child, on the right side. The line of fracture passes just in front of a bicuspid tooth, which can be seen in the alveolar wall, but has not yet passed through it. There is also an L-shaped fissure on the inner side of the coronoid process, almost detaching it from the rest of the bone.

30. Fracture of the right side of the lower jaw of an adult. The fracture is situated at the junction of the ascending with the transverse ramus, and is directed from above (just behind the last molar) downwards, and a little obliquely outwards, through the whole thickness of the bone.
31. Calvarium of Mrs. A. A. M., aged 17, an Eurasian, killed by the discharge of a gun loaded with small shot. She died $24\frac{1}{2}$ hours after being wounded. The right side of the frontal bone, above the outer angle of the eyebrow, is marked by a number of small shot, of which only three have penetrated. Their tracks are united by fractures, and the piece of bone thus isolated has fallen out. Another grain of the shot has penetrated near the posterior margin of the frontal bone, and a long fracture extends backwards from it, through the parietal bone, following one of the branches of the middle meningeal artery. (Colles.)
32. The anterior part of the skull of Garrett Rouke, Her Majesty's 18th Regiment, who was shot through the head in the attack on the Great Pagoda of Rangoon. The bullet (a rounded leaden one) entered just behind the left frontal eminence, where the skull has been trephined, and is now lodged where it was found, after having made a tolerably clean hole (without any comminution of surrounding bone) in the inner side of the orbital plate of the *right* side. At the orifice of entrance the margin of bone is irregular externally, and internally a portion of the inner table is depressed. (Ewart.) A linear fracture or fissure through both tables extends from the lower margin of the trephine hole downwards and inwards to the superciliary ridge. (*Presented by Dr. J. Fayrer, Field Hospital, Rangoon.*)
33. Extensive fracture of the vault of the skull from lightning. Commencing with the left parietal region, there is a bevelled fracture running upwards and backwards from near the anterior inferior angle of the parietal to the posterior third of the sagittal suture, across the latter into the posterior superior angle of the right parietal, and downwards along the posterior margin of that bone to end near the centre of the right half of the lambdoid suture. Meeting this fracture near the posterior superior angle of the right parietal is a second linear fracture completely through the bone, and which may be traced from this point transversely across the right parietal, the right half of the coronal suture, and into the frontal bone, terminating just above the superciliary ridge. A third fracture is seen in the right parietal, from its anterior superior angle (at the sagittal suture) downwards and backwards to join the second fracture above described, just above the right parietal eminence. All the bones forming the vault of the skull are unusually thin. (*Presented by Assistant Surgeon Udi Charn Datta.*)
- 33a. Fœtal head from a case in which craniotomy was performed on account of contraction of the pelvic outlet, showing the extensive injuries inflicted upon the bones of the vault and base by the perforator. The bones chiefly broken up are the left parietal,

the occipital (at the posterior fontanelle), the left temporal and malar, and the sphenoid.

34. Fracture of the odontoid process of the axis, the result of a fall from the top of a house, followed by instant death.—From a native female. (Ewart.)
35. Fracture of the fifth and sixth cervical vertebræ. The fracture is directed from above downwards and a little to the left, passing completely through the bodies of both vertebræ. No history.
36. Fracture of the rings of the first, second, and third cervical vertebræ, displacement of the second from the third, with rupture of the intervertebral substance, and laceration of the cord and membranes. (Ewart.)
37. A comminuted fracture of the fifth cervical vertebra, with displacement forwards and a little to the left of the lower portion of the spinal column. The intervertebral cartilage between the fifth and sixth vertebræ is ruptured. The membranes of the cord are entire, but the latter must have been compressed opposite the seat of injury. No history.
38. Transverse fracture of the body of the sixth cervical vertebra, and a vertical fracture of the left lamina of the fifth cervical. "The pia mater of the cord to the level of the second dorsal vertebra was found a good deal congested, and the cord itself in the neighbourhood of the fracture softened and compressed."—Case of a native (male), Cheytun Das. The injury was produced by the fall of a bag of rice, weighing two maunds, upon the upper part of his spine.
39. The cervical portion of the spine and the first two dorsal vertebræ, with the whole of the cord. From a native (male) patient, aged 45. There is a transverse fracture of the fourth cervical vertebra, with forward displacement of the cervical spine, and consequent pressure and injury to the cord. The patient died a few hours after the accident.
40. Transverse fracture of the body of the sixth cervical vertebra, with displacement forwards of the upper cervical vertebræ, and compression of the cord. The anterior common ligament is ruptured.—From a Hindu cooly. The injury resulted from the fall of a heavy sack of rice on the back of his neck. "The sternum of this patient was found also fractured between the second and third costal cartilages; and as there was no external mark of injury in the thorax, it is presumed that the bone must have given way in consequence of the sudden doubling forwards of the chest when the weight descended upon the neck.
"On admission the patient had still some slight power of motion in the upper extremities, but the rest of the body was paralysed. He lived for eight or nine hours." (Colles.)
41. The cervical portion of the spine, showing fracture of the fourth vertebra. The body is completely broken from behind forwards, and the spinous process, with parts of the laminae, separated. The patient, a native cooly, while carrying a heavy load on his head, accidentally fell forwards; the load slipped on to the back of his neck, causing powerful flexion of the spine and consequent

fracture. When admitted into hospital there was much swelling of the soft parts at the back of the neck, and complete paralysis both of motion and sensation of the trunk, upper and lower extremities. The respiration was entirely diaphragmatic. The intellect remained unaffected. He survived the injury 59 hours. The spinal cord was found, *post-mortem*, extensively crushed.

42. Fracture and dislocation of the cervical portion of the spine. The upper portion of the right superior articular process of the fifth vertebra is fractured and detached ; and in consequence of this, the inferior articular process of the fourth vertebra is thrown forwards and inwards. The left inferior articular process of the fourth has glided backwards, and its transverse process become approximated to the left superior articular process of the fifth. The capsular ligaments on both sides were torn. The anterior ligament was unfortunately cut away at the *post-mortem* examination. The injuries above described contributed to the twist of the upper part of this portion of the spine upon the lower.

The patient, a Mahomedan coachman, fell head foremost from his seat on the box on to the carriage wheel below, and then to the ground. He was brought into the hospital completely paralysed, and the respiration purely diaphragmatic. He was also quite insensible, but yawned occasionally, and there were other indications of motor power in the muscles of the face. He survived about seventy hours.

43. Fracture of the fifth and sixth cervical vertebræ. The body of the fifth is broken transversely, and the laminae separated from the pedicles. The body of the sixth is partially fractured. The patient (a native) was picked up in the street drunk and paralysed, and brought thus to the hospital. He had no recollection of any injury, and no history of the same could subsequently be ascertained. There was complete paralysis of the trunk, lower extremities, and left arm. Slight power of movement in the right upper extremity. The respiration was not entirely diaphragmatic ; the intercostal muscles of the right side appeared to work. Both sensation and motion were normal in the head and face. The patient could talk rationally (after recovering from his drunken condition), could whistle, and slightly raise his head. He complained of much pain at the lower part of the neck.

44. Fracture with displacement of the cervical portion of the spine. The subflavian ligament between the seventh cervical and first dorsal vertebræ is torn through, as also the inter-transverse, inter-spinous, and supra-spinous ligaments. The laminae of these vertebræ are widely separated. The lower edge of the left articular process of the seventh cervical is chipped off, and the whole of the cervical portion of the column seems to be a little twisted from right to left, forwards and inwards, upon the dorsal vertebræ. The cord at the seat of injury was found deeply injected and softened.

The specimen is taken from a Hindu coachman, aged 30. While driving, he accidentally fell off, alighting on the back of his neck, the head being thrown violently forwards. When brought into hospital a fracture could distinctly be felt at the lower cervical region of the spine, and the patient was paraplegic. Loss of sensation reached to the level of the nipples, above which line it was imperfect, but normal over the face, head, and upper extremities; he could also move his arms. The respiration was almost entirely abdominal, the chest-walls moving but slightly.

45. Fracture of the fifth and sixth cervical vertebrae. The fifth vertebra has a fracture passing vertically through the whole thickness of the body, so as to divide it into two equal portions. The sixth vertebra is fissured from above downwards, a little to the left of the median line, through nearly the whole thickness of the body, but not reaching the anterior surface. It is best seen from behind, where the laminae were removed *post-mortem* in order to expose the cord. The latter was lacerated, indeed, almost completely and abruptly severed opposite the fracture.—From a European seaman, who, while partially intoxicated, jumped head-foremost off one of the jetties into the river for the purpose of bathing, the water at this spot being, however, only about a foot and a half deep.

On admission into hospital there was a large contused wound on the vertex of the skull; the pupils slightly contracted; respiration 48, diaphragmatic; was quite conscious, but restless, and complained of pain at the back of the neck. There was complete paralysis of both motion and sensation in the lower extremities and lower half of the trunk. No reflex movements of the limbs elicited by tickling the soles of the feet. No paralysis of the upper extremities. No priapism.

Was admitted at 7-30 P.M. on the 23rd September 1877; at 8-30 P.M. the temperature was $100^{\circ}2$; at 10 P.M. $101^{\circ}4$; at 1 A.M. $104^{\circ}2$. 24th September, 7 A.M. Temperature $105^{\circ}4$; breathing laboured; patient quite unconscious.

3 P.M. Temperature in the axilla 107° ; in the rectum $107^{\circ}2$; of lower extremities $101^{\circ}6$.

9 P.M. Temperature in axilla $106^{\circ}6$; of lower extremities $101^{\circ}8$. Breathing very difficult and pulse very frequent.

3-30 A.M. (25th September.) Respiration stertorous; no pulse; died at 3-50 A.M., *i.e.* about 44 hours after admission.

46. Dislocation forwards of the fifth cervical vertebra, with rupture of the intervertebral cartilage between it and the sixth vertebra. The opposed articular processes of the fifth and sixth vertebrae are seen separated; the capsular ligaments ruptured. The cord is exposed behind, and shows softening and compression opposite the displaced vertebra. No history.

47. "Cervical vertebrae of Kessub Dass, admitted into hospital with what was supposed to be spasmodic contraction of the anterior muscles of the neck, flexing the head permanently forwards. The next day chloroform was administered, and the head

extended. The patient became pale and depressed, and died in five hours."

The intervertebral substance has separated from the under surface of the body of the fifth cervical vertebra, and is much torn where still adherent to the sixth, "and the ends of the articular and spinous processes of both these vertebræ are broken off. The anterior common ligament, if not the posterior also, had been ruptured before death. There was some ecchymosis of the muscles surrounding this portion of the spine. There appeared to be no deformity of any of the vertebræ.

"The spinal cord opposite the point of fracture was slightly softened and constricted, and the pia mater was slightly injected. Under the microscope this portion of the cord did not show anything abnormal." (Colles.)

48. A dry preparation of a case of spinal luxation, high up in the cervical region, resulting in paralysis of both upper and lower extremities, and terminating in death on or about the twelfth day.

Bhoot Nath, a Hindu cooly, aged 25, was carrying a heavy log of wood on his head together with another fellow-labourer, who, letting it fall off his own head, caused a sudden backward, forcible jerking of the patient's head and neck, and the latter is then said to have immediately fallen to the ground, "losing all power and sensibility in his limbs. He remained at home in this state for about five days, but was brought to the hospital on the 17th June 1870. There was an unusual hollow at the back of the neck, but no crepitation or lateral flexion detected." The bladder was paralysed, and the rectum partially so. "He remained quite conscious up to the 21st, when he became delirious, the breathing laboured and entirely diaphragmatic, and he died on the 23rd June."

On *post-mortem* examination there was found rupture of the anterior common ligament, with displacement forwards of the intervertebral substance between the third and fourth cervical vertebræ. The cord was greatly compressed, almost cut through at this portion of the spine. Its substance softened, so as to wash away on pouring a stream of water over it. No fracture could be detected.

[In the dry preparation preserved, the spinal canal has been opened from behind, the spinous processes and laminæ of the vertebræ being cut away. This renders the specimen less interesting and reliable, inasmuch as it is hardly possible to understand how so complete severing of the cord could take place without fracture.-- J. F. P. McC.]

49. Dislocation forwards of the cervical spine. The fifth intervertebral cartilage, *i.e.* that between the sixth and seventh cervical vertebræ, has been ruptured, as also the anterior common ligament and the capsular ligaments. No fracture appears to have taken place. A large extravasation of blood was found at the site of the luxation, both external to the dura mater and within that membrane. It reached downwards as far as the last dorsal

vertebra, and extended upwards into the skull. The cord at the seat of injury was completely compressed.

The man from whom this preparation was taken was a European, aged 41, an officer of the S. S. *City of Boston*. He was on shore with some friends, and while in a semi-intoxicated condition fell out of a window, 18 feet from the ground, on to his back. He appears to have become insensible for a short time. When picked up, about twelve hours after the accident, he was found completely paralysed; and in this condition was brought to the hospital. Besides complete paralysis of the upper and lower extremities, and of the trunk from the hips to the level of the nipples, the breathing was diaphragmatic, and the patient loudly complained of pain at about the level of the first dorsal vertebra. The skin was intensely hot and pungent; temperature 106° Fahrenheit; the pulse incompressible, full, and bounding.

He was bled to 16 ounces, and appeared to be much relieved thereby, but after a few hours became drowsy and confused, and this gradually deepened into coma (probably as the extravasation into and around the cord at the seat of the injury extended upwards to the medulla and base of the brain), and died eighteen hours after admission.

50. Fracture of the spinous processes and laminæ of the last dorsal vertebra, with rupture of the intervertebral fibro-cartilage between it and the twelfth vertebra. The anterior and posterior common ligaments have been completely torn through. The upper part of the spinal column is displaced downwards, forwards, and to the left—upon the lower. The termination of the cord is greatly compressed and flattened, but the membranes were found entire (unruptured).—From a native (male), aged 50, upon whose back a bag of pepper, weighing about two maunds, accidentally fell. There was complete paraplegia, with loss of power also, over the bladder and rectum. The anæsthesia extended as high up as the middle of the abdomen.

51. Fracture of the spine. The preparation exhibits a very severe comminuted fracture of the eleventh dorsal vertebra. The anterior compact lamina of the body of this vertebra has been broken into several fragments, and a vertical fracture extends through the whole thickness of the body, a little to the right of the median line. This presents a mere fissure anteriorly, but is wide, and the fragments much displaced posteriorly. The right articular process has also been completely separated. (The laminæ have not been preserved.) Around and over the fractured bone traces of reparative action, *i.e.* new osseous deposit, are observed, showing that the fracture was of some standing.

The subject was a native (male), aged 40, and the fracture was produced by the fall of a heavy bale of jute upon his back. There was no external injury. (*Presented by the Police Surgeon.*)

52. Comminuted fracture of the third, fourth, and fifth lumbar vertebræ, with considerable displacement of the fragments. No history.

53. Transverse fracture of the body of the first lumbar vertebra, with displacement forwards and to the right of the upper upon the lower portion of the vertebral column. The cord is compressed just at its termination in the cauda equina. Firm bony union is seen to have taken place between the fractured fragments. (*Presented by Professor Allan Webb.*)
54. "Spinal column of a patient named J. Stone, aged 25 years, admitted with paraplegia on the 9th April, and died on the 27th May 1866. There is a transverse fracture across the body of the first lumbar vertebra." At the seat of fracture the "cord was found almost completely torn in two." "Both above and below this point there was considerable softening; in an upward direction this extended as far as the tenth dorsal vertebra." (Ewart.)
55. Transverse fracture of the first lumbar vertebra, with laceration and rupture of the intervertebral cartilage between it and the last dorsal, and dislocation backwards of the upper portion of the spine at the level of the injury. The cord was found "slightly softened and congested a little above the injury."—From a native male, aged 35, who fell from a considerable height, and fractured, at the same time, his right os calcis.
56. Preparation showing an oblique fracture of the body and laminae of the third lumbar vertebra, as well as fracture of its right transverse process. The spine of the third lumbar vertebra was found in its natural position, the spine and body of the fourth vertebra, as well as the intervertebral substance, between the second and the third vertebræ (the latter carrying with it the fractured portion of the body of this vertebra), dislocated forwards. The interspinous ligament between the third and fourth lumbar vertebræ has also given way, and the inferior articular process of the former and superior articular process of the latter are separated by an interval of quite half an inch.
- "There was no trace of repair in the spinal fracture discovered on *post-mortem* examination, only a little thickened pus between the interstices of the fractured body of the third lumbar vertebra."
- "The subject, a petty officer on board a vessel in the harbour, while engaged in some operation at the top of the mainmast, fell into the hold, a height of about 60 feet." He was removed to the General Hospital, and remained there in a partially paraplegic state for forty days. "There was no complete loss of motion in the lower limbs, but rather a deficiency or impairment of their movements. Cutaneous sensibility was rather increased. There was also loss of control over the bladder, but never so great as to necessitate the use of the catheter. Bedsores formed, and latterly diarrhoea set in, and the patient died from exhaustion consequent thereupon." (*Presented by Dr. S. C. Mackenzie, General Hospital, Calcutta.*)
57. Transverse fracture of the body of the first lumbar vertebra. The upper fragment is displaced forwards, the lower backwards, thus forming an abrupt posterior curvature. The cord and membranes were much compressed, highly vascular, and inflamed-looking.—From a native female, aged 26. She was admitted into

hospital completely paraplegic, and with a large bed sore over the sacrum. Stated that fifteen days previously she had fallen off a wall about six feet high, alighting on the buttocks, and found she could no longer walk. Three days after, noticed that there was complete loss of power and of sensation in the lower limbs, and that a sore was forming over the sacrum. There was a distinct dorsal curvature of the spine at the injured region. High irritative fever prevailed during her stay in hospital; this was complicated with dysentery latterly, and she died exhausted on the seventeenth day after admission, and the thirty-second day of the accident and injury.

58. Fracture of the atlas through the right articular surface, and of the body of the axis; dislocation of the atlas from the axis by a musket-ball, now lying between the right articular surfaces of these vertebræ and the odontoid process. The annular ligament is cut across.—From a European who lived nine days after the receipt of the injury. (Ewart.)
59. Fracture of the rings of the last cervical and first dorsal vertebræ from a gunshot wound in a European. The cord is shown. The membranes and substance are considerably damaged. (Ewart.)
60. The atlas, axis, third, fourth, fifth, and sixth cervical vertebræ, showing a clean incision or incised wound obliquely across three-fourths of the body of the sixth, and splitting up the left articular process and lamina of the same vertebra, to the root of its spinous process. Another incised wound cuts through the articulation between the third and fourth vertebræ on the left side. This incision passes through the whole thickness of the body of the fourth vertebra, which is thus divided obliquely from above, downwards and inwards, into unequal portions. The lamina of the same vertebra on the right side is fractured vertically.

“The bones are supposed to be those of one Buddynath Chuekerbutty, who had been some time missing,” and was believed to have been murdered. The appearance of the vertebræ leaves no doubt that the injuries were inflicted by a sword, dhaö, or other sharp-cutting instrument. (*Presented by Dr. W. B. Beatson, Civil Surgeon, Dacca.*)
61. Fracture, more or less complete, of all the ribs except the first and last, of the left side of the body. The line of fracture extends obliquely from above downwards and forwards. Firm bony union has taken place, with comparative little deformity of the outline of the thorax on the affected side. No history. (*Presented by Mr. G. H. Daly.*)
62. A simple fracture of the second rib (right side), about an inch beyond the angle. The fragments are held together by periosteum.—From an East Indian woman, aged 50, who fell off a couch on to her right side, while suffering from an attack of fever (to which she ultimately succumbed); pain was also experienced in the right shoulder, and crepitus was felt here as if due to fracture about the joint. On dissection, however,

no fracture was found, but inflammation of the capsular ligament, and about two drachms of turbid, semi-purulent synovia collected within it.

63. A preparation showing a comminuted fracture at the lower third of the manubrium, and a transverse fracture through the first piece of the sternum just above the level of the third costal cartilages; also, multiple fractures of the ribs. On the left side, an oblique fracture from without inwards of the second rib, one inch from its cartilagenous attachment. A double vertical fracture of the third rib, one, at half an inch from the costal cartilage, the other, two inches beyond this. The fourth rib has two similar vertical fractures at the same distance from its costal cartilage. The fifth and sixth ribs have similar double fractures; the seventh and eighth ribs single fractures, running obliquely from without inwards, each half an inch from the cartilage, the ninth rib has an incomplete ("green-stick") fracture in the same situation. On the right side, the second and fifth ribs are alone fractured, the direction of the fracture being from within outwards, and from above downwards, and situated about one-third of an inch from their respective costal cartilages.—From a native male, aged 35, who died in hospital eighteen days after the receipt of these injuries. They were produced by the fall of a large bale of silk upon his back, from a height of about fifteen feet. The knees were driven into the chest, and thus both sternum and ribs were fractured. There was also a compound fracture of the left leg, at its lower third.
64. A badly united oblique fracture of the right clavicle, at its middle third. The broken ends override each other, and have united in this position, producing considerable deformity of the bone.
65. Fracture of the right clavicle at about the centre of the bone. Firm osseous union has taken place, with a good deal of thickening in the neighbourhood of the fracture, but no marked deformity.
66. "Comminuted fracture of the right scapula, from a native labourer, who was caught in a surkhi-mill. His right radius was also broken, the soft parts completely stripped off the back of the right hand, and a laceration of the right axilla, about six inches long, exposed the axillary vessels and nerves as cleanly as if they had been dissected. The patient sank exhausted in a few hours." (Colles.)
67. A longitudinal fracture of the right scapula, extending from the supra-scapular notch, through the spine and body, to within an inch of the angle of the bone along the axillary margin. This was the result of a sword-cut. "The imperfect nature of the union after seventy-four days is shown." Much new bone has been thrown out along the line of fracture, especially on the ventral surface, but the margins of the divided bone remain ununited.

"The patient was a Chinese, named Wheo Teng Chong, apparently about 30 years of age, brought into hospital, having been attacked by some unknown individual, and severely wounded by a sword in the right shoulder, arm, and neck.

"The strength of the antagonizing muscles was such as to prevent the divided ends of the spine of the scapula from being accurately approximated." The patient, however, did well until attacked with "colliquative diarrhœa, under which he sank, having been seventy-four days under medical treatment." (*Presented by Dr. William Twill, Singapore.*)

68. Fracture through the base of the greater tuberosity of the left humerus, and "reparation by a considerable formation of new bone." During the process of union, the detached tuberosity seems to have been drawn upwards and inwards by the scapular muscles (supra-spinatus and infra-spinatus) and thus fixed in its present abnormal position.
69. Left humerus and some of the soft parts and integument, showing compound, comminuted fracture of the surgical neck, extending into the joint; oblique fracture of the shaft at the junction of the upper with the middle third, and transverse fracture of the olecranon: the ulna up to the point of fracture has been inadvertently detached. These injuries were inflicted on the patient (a Hindu woman, aged 35) by a fall from a roof twenty-five feet high. Amputation at the shoulder-joint was performed by Dr. Fayrer. (Ewart.)
70. Angular fracture of the shaft of the humerus at the junction of the middle with the lower third. The convexity is forwards. There is a good deal of thickening at the site of fracture, particularly on the lateral and posterior aspects, showing an attempt at repair. (Ewart.)
71. Preparation showing a compound fracture of the left humerus, a little below the centre of the shaft. The upper fragment is seen projecting on the outer aspect of the arm through the soft parts. There was also a compound fracture of both bones of the forearm, about an inch above the wrist, and much laceration of the soft parts. Amputation was performed at the shoulder-joint.—From a native male, Kylash.
72. The left humerus from a case of compound fracture, in which, gangrene having supervened, amputation had to be performed at the shoulder-joint the fifth day after admission into hospital.—From a native male, aged 30. The fracture is seen to be comminuted, and situated at the junction of the middle with the lower third of the bone.
73. Transverse fracture of the right humerus just above the condyles, with a vertical fracture separating the latter and communicating with the elbow-joint. The fracture was compound. (*Presented by Professor Allan Webb.*)
74. Compound fracture of the lower third of the shaft of the left humerus, with great displacement of the fragments. The lower is drawn upwards and a little outwards in front of the upper fragment, and terminates in a sharp-pointed, broken extremity,

which protruded through the soft parts (now partially cut away in order to display the fracture).

75. Compound fracture of the left humerus at its lower third, the result of a fall from a palm-tree. The subject was a native adult, a "toddy-drawer."

Gangrene of the whole arm succeeded the injury, and amputation at the shoulder-joint had therefore to be performed.

76. Left arm and forearm of a Hindu lad, aged 20, admitted with compound fracture of the humerus just above, and of the ulna just below, the elbow-joint. The injury was produced (a month before) by a fall from the terrace of a house. Amputation at the shoulder was performed, as the whole of the skin of the forearm was undermined by abscesses, the radius exposed, and stripped of periosteum for the greater part of its length, and the fractured ends of the humerus and ulna were protruding through wounds at the elbow-joint, as seen in the preparation. (Colles.)

77. The arm and forearm of a native boy, Behari Lal, aged 9, admitted with compound fracture of the lower end of the left humerus, just above the condyles, and also Colles' fracture of the radius. Amputation was performed at the lower third of the arm, but osteo-myelitis supervening, the arm had to be removed at the shoulder-joint. The patient died from pyæmia. On *post-mortem* examination, the base of the left lung was found gangrenous, and there were multiple abscesses in both lungs, &c. (Colles.)

78. A comminuted fracture of the lower end of the right humerus. The fracture was compound, and associated with a compound fracture of both bones of the forearm, just above the wrist. The exact injuries to the humerus are as follow:—(1) a transverse fracture through the lower extremity, immediately above the epiphysis, completely separating it from the shaft; (2) an oblique fracture from above downwards and inwards to meet this, starting an inch and a half above the inner condyle, and passing also completely through the shaft; (3) a transverse, comminuted fracture of the anterior and upper margin of the trochlear surface; and (4) a chipping-off of the pointed extremity of the internal condyle.—From a native boy, aged 14, who fell off the bough of a tree, about six feet high, and alighted first on his hand and then on to the elbow.

79. Transverse fracture, through the the lower epiphysis of the left humerus, involving the elbow-joint. The radius and ulna not injured. The fracture was compound, and from improper treatment the limb became gangrenous, so that on admission into hospital amputation at the shoulder-joint had to be performed.

The subject was a native boy, aged 12. He made a good recovery. (*Presented by Surgeon E. Lawrie, M.B.*)

80. Preparation from a case of maltreated compound fracture of the lower end of the left humerus, resulting in gangrene of the limb, and necessitating amputation at the upper third of the arm.

The patient, a Mahomedan, by occupation a ryot or cultivator, fell off a mango-tree, about twenty feet high, on to his left elbow. He was treated by a "kuberaj," who did not put up the limb in splints, but applied some "ointment." The whole arm inflamed, became very painful, and a fœtid discharge began to issue from a wound at the back of the elbow. When admitted into hospital, about two months after the accident, the limb was quite gangrenous, emphysematous crackling extending as high up as the shoulder-joint.

An examination of the bones, after maceration and drying, shows a comminuted fracture of the humerus, about two inches above the elbow-joint, and involving the latter. The bone seems to have fractured transversely, and at the same time a longitudinal slit through the articular surface has taken place,—a T-shaped fracture, resulting in the complete separation of the condyles from each other, and a division of the trochlear surface into nearly equal parts.

Around the seat of fracture much new bone has been thrown out, and forms irregular-shaped, tuberos, and stalactitic masses. At the lower third of the shaft of the humerus a similar rampart of new bone is seen, forming a line of demarcation between the portion of bone above, which is healthy, and the portion below, which is necrosed and dead. The latter is a piece about two inches in length, situated immediately above the seat of fracture. It was almost completely separated from the healthy upper two-thirds of the humerus.

81. A portion of the lower end of the left humerus, about three and a half inches in length, just above the inferior epiphysis. This portion of the shaft constituted the upper fragment of a compound fracture passing through the epiphysis, and the result of a fall from a tree upon the elbow. The bone now preserved projected through the wound, and was destitute of periosteum. It was therefore sawn off. "Complete reproduction of the lost bone took place."—From a native boy, aged 12. (*Presented by Dr. W. B. Beatson, Dacca.*)
82. Comminuted fracture of the left humerus from a gunshot wound, with feeble attempt of nature to repair the mischief.--From the arm of a Burmese, who received the injury in a dacoity. The limb was removed by amputation near the shoulder-joint on the thirtieth day after the injury, and the man made a good recovery. The specimen is interesting as showing the amount of injury a single ball may produce. (Ewart.) (*Presented by Dr. Fayrer, Assistant Surgeon, Field Hospital, Army of Ava.*)
83. Compound fracture of the left ulna and radius at about the centre of their shafts. The broken ends of the ulna are protruding through the soft parts on the inner aspect of the forearm, and the lower fragment is drawn upwards in front of the upper. The lower half of the forearm has become gangrenous, and the line of demarcation at the level of the fractured bones is well-defined. Amputation has been performed just above the elbow. No history. (*Presented by Dr. Bowser of Bankoora.*)

84. Compound fracture of the right radius and ulna, about two inches above the wrist-joint, with much laceration of the soft parts. No history.
85. Compound fracture of the left ulna and radius just above the wrist-joint. The soft parts in the palm of the hand are much lacerated, and to a less extent those also on the dorsum of the hand and ulnar side of the forearm; while the carpal articulations are exposed, and the little finger has apparently been torn off. There is no history, but the appearances strongly suggest a machinery accident. (*Presented by* Dr. Esdaile.)
86. A compound fracture of the right ulna and radius, exposing the wrist-joint. The hand is apparently gangrenous. No history.
87. Compound fracture of both bones of the left forearm, immediately above the wrist-joint, with protrusion of the upper fractured ends of the bones through the soft parts on the anterior aspect of the seat of injury. No history.
88. Transverse fracture of the shaft of the radius, about two and a half inches above the wrist-joint. The fragments completely override each other, the lower being drawn behind the upper, and fixed in this position by periosteal thickening and condensation. No bony union has taken place "on account of the age and debility of the patient, who died three weeks after, from the effects of injury to the head received at the same time as the fracture." (Ewart.) (*Presented by* Mr. E. T. Koch.)
89. Compound comminuted fracture of the lower third of the right radius, involving the wrist-joint. There was also a compound dislocation of the elbow-joint, and a portion of the anterior margin of the head of the radius appears to have been chipped off. Amputation at the lower third of the arm had to be performed.—From a native male, aged 40.
90. Multiple fractures of the carpus and metacarpus.
The patient, a native workman, got his hand caught between the two cogged wheels of an oil-machine. There was very extensive laceration of the soft parts. Amputation at the lower third of the forearm had to be performed.
In the preparation (a dry one) the bones of the forearm (left) are seen to be uninjured. In the carpus the unciform and trapezium have alone suffered. The former is somewhat obliquely fractured into two nearly equal portions; the latter has had small portions of its anterior and outer surfaces chipped off. The base of the third metacarpal is fissured longitudinally on its posterior aspect. The second and third metacarpal bones completely fractured; the former, transversely at its centre, the latter somewhat obliquely at the junction of its lower and middle thirds. There is a comminuted fracture of the proximal phalanx of the index finger, and of the second phalanx of the middle finger.
91. Compound fracture of the metacarpal bones of the index and middle fingers of the left hand, with great laceration of the soft parts. The thumb appears to have been torn away in its entirety. No history. Amputation has been performed at the middle of the forearm.

92. A comminuted fracture of the head of the first phalanx of the forefinger.
93. The head of the metacarpal bone and the three phalanges of the right middle finger longitudinally bisected. The middle phalanx shows the remains of a transverse fracture at about its centre, with considerable thickening of the bone in this situation, and deposit of callus both between and around the fractured fragments.

The patient, a European sailor, resumed his avocation when the fracture, treated in the usual way, was believed to be united, but about a month after, he accidentally received a blow from a rope at the seat of injury. This was succeeded by some swelling and great pain. No re-fracture of the phalanx could be detected, but the pain continued so severe in spite of all treatment that he consented to have the finger amputated, and this at once gave relief. On dissection, the digital branches of the median nerve on either side of the finger were found somewhat flattened, compressed, and fixed opposite the seat of fracture, and it is probable that much of the severe pain experienced was attributable to this condition of the nerves.

94. Dislocation, backwards and outwards, of the left elbow-joint. The head of the radius is fractured, and also the coronoid process of the ulna. The latter, drawn upwards by the brachialis anticus, lies in front of the humerus. The anterior, external, internal, and orbicular ligaments have all been more or less ruptured.
95. A preparation showing dislocation, forwards and inwards, of the head of the left radius. The orbicular ligament is partly torn, the head of the radius resting upon the anterior aspect of the coronoid process of the ulna.
96. Two preparations illustrating dislocation of the head of the radius backwards. In one (left elbow) the displacement is slight. The head of the radius is thrown backwards and outwards. It is of peculiar formation, being broad and surmounted by a small tubercle near its posterior margin. The external, lateral, and orbicular ligaments are torn through. In the other (right elbow) the displacement is greater, although in the same direction. The external condyle of the humerus is twisted forwards so as to rest on the tip of the coronoid process of the ulna. The anterior, external, orbicular, and a portion of the posterior ligaments are torn through. No history.
97. Gunshot wound of the right elbow-joint. The head, and an inch and a half of the shaft of the radius, and a portion of the external condyle of the humerus, have been blown away. (Ewart.)
98. Gunshot injury of the palm of the left hand, exhibiting great comminution of the bones of the carpus, compound fracture and dislocation of the wrist-joint, and extensive laceration of the soft parts. The injury was probably due to an explosion very close to the palm of the hand, as the torn tissues are thickly impregnated with the bluish-black granules of gunpowder. No history.

99. Fracture of the body and descending ramus of the left os pubis, with a linear transverse fracture of the right symphysis pubis. No history..

100. Fracture of the right pubes and ischium in a native. The bladder was ruptured. (Allan Webb.)

101. Fracture of the pelvis, with rupture of the urethra, and extravasation of urine.

The patient was almost pulseless when admitted into hospital, and remained so until death, about twenty-four hours after. Perineal section was performed.

On *post-mortem* examination, "urine was found effused among the abdominal muscles in the hypogastrium, and between them and the peritoneum. The bladder was contracted. Its surface covered with patches of very dark congestion." * * * "A large cavity full of clots and effused urine lay on the right side of the neck of the bladder, and between it and the ischium, bounded below by the triangular ligament. The urethra was torn clean across its prostatic portion, communicating by its torn opening with the aforesaid cavity. The perineal incision made during life lay in the middle line of the bulb. The tube introduced by it had been passed, not into the detached (prostatic) portion of the urethra, but into the space in question, which extended round in front between the prostate and symphysis." * * * "There was a fracture on each side through the os pubes in front of the acetabulum, and of the ischium in front of the tuberosity."

"The preparation consists of a portion of the os innominatum on each side, including the fracture, and of the bladder, rectum, penis, urethra, and triangular ligament." (Colles.)

102. The right ilium, ischium, and sacrum, traversed by numerous fractures. No history. (*Presented by* Professor Allan Webb.)

103. A preparation showing a comminuted fracture of the right acetabulum, with forcible thrusting upwards and inwards of the head of the femur, which has thus become impacted, and now occupies a portion of the true pelvic cavity.

104. Multiple fracture of the pelvis. The patient, an adult Mahomedan, fell from a considerable height upon a rough block of wood, and was admitted into hospital with a large lacerated wound in the perineum. There appeared to be, however, no rupture of the urethra or bladder. The fractures are as follow : (1) two longitudinal fractures passing from above downwards and outwards through the body of the sacrum, that on the right side being comminuted, that on the left incomplete (fissured); (2) a vertical fracture through the body of the pubes on either side, just internal to the pectineal eminence; (3) a fracture, slightly oblique, from above downwards and inwards, through both ascending rami of the ischia; and (4) on the right side, a fracture similarly directed through the descending ramus of the pubes. In the fresh state, the ligaments at the symphysis pubis were found torn through, and the articular surfaces separated. No injury to the bladder, rectum, or urethra.

105. Gunshot fracture of the pelvis, &c. (Case of Lieutenant R. P. W. H., Her Majesty's 107th Regiment.)

"The left os innominatum and head and neck of the femur are preserved. The latter, broken into four pieces, the former showing extensive fractures about the acetabulum, and body and descending ramus of the ischium. The bone is greatly comminuted, and several fragments have been lost.

"The wound was inflicted by a 'Snider' rifle-ball, fired from a distance of twenty-five to fifty yards. The patient, who was crawling on all fours, having been mistaken for a wild animal. Amputation was performed at the hip-joint, but the patient died from shock about three hours after the operation." (Colles.) *Presented by Dr. Fayrer.* (See also *Indian Medical Gazette*, November 1867.)

106. Intra-capsular fracture of the neck of the left femur, with the subsequent formation of a false joint between the trochanter major and broken neck of the bone.

107. Intra-capsular fracture of the head and neck of the right femur.

108. Another well-marked example of intra-capsular fracture of the neck of the femur (left).

109. Intra-capsular fracture of the head and neck of the left femur, with much comminution of the great trochanter. No history.

110. Long-standing intra-capsular fracture of the femur (left). No attempt at union has taken place. The neck of the bone has been almost completely absorbed, as also a considerable portion of the brim of the acetabular cavity. The trochanters are rounded off from the same cause. All the osseous tissues composing and surrounding the joint are light, porous, and atrophied. (*Presented by Professor Edward Goodeve.*)

111. Intra-capsular fracture of the left femur. From a European female, aged 40. The joint has been opened from behind. A transverse fracture is seen dividing the neck of the bone. The ligamentum teres retains its integrity. No attempt at union has been made, although the patient was in hospital under treatment for seven months.

112. A dry preparation, showing (1) an intra-capsular fracture of the neck of the left femur; (2) an extra-capsular fracture passing from above, downwards and inwards through the great trochanter—probably comminuted. The latter has united, and an enormous quantity of new bone has been thrown out around the fracture and neck of the bone, but the intra-capsular fracture remains ununited, nor is there any evidence of reparative action in connection with it. The whole bone is light, spongy, and exhibits the usual characteristic alterations in structure common to old age. Taken from a European woman, Mrs. W.—, aged 50. She died five months after the accident from "chronic diarrhœa."

113. Ununited intra-capsular fracture of the neck of the right femur.—From a European woman, aged 50.

The specimen shows that almost the whole of the neck and a portion of the head of the bone have been absorbed, and that little or no attempt at union, either ligamentous or osseous, has taken place, although, at the time of the death of the patient, two months had elapsed since the injury was received.

- 114.** Impacted extra-capsular fracture of the neck of the left femur. The impaction of the upper fragment into the cancellous tissue of the trochanter major is very distinctly seen in the section which has been made through the bone. The great trochanter is also seen to have been obliquely fissured on its outer and posterior surfaces, the fissure terminating a little below the lesser trochanter. This has been completely closed by callus, and partial bony union has also taken place between the impacted neck and trochanter major.

The patient, Thomas W., a stout, muscular seaman, aged 53, fell "from the top of the spare spars, on board the ship, on to the deck, a height of about ten feet, and alighted on the great trochanter of the left side." He was unable to rise, and was carried to the General Hospital, where the following symptoms were noted:—
 "Decumbency on the back; left leg everted, powerless; a good deal of ecchymosis about the trochanter major. No perceptible shortening; no crepitus; great pain produced by any muscular exertion, but flexion and extension can be performed passively to a considerable extent without inconvenience."

"No treatment was adopted, except perfect rest in bed and support with pillows. He soon began to move the limb with his hands and the other leg, and in twenty-two days was able to go about with crutches. At this time there was apparent shortening, as the toes only reached the ground. This was attributed to interstitial absorption, the more readily, as the trochanter was now found somewhat flattened. The foot continued everted. He could never bear much weight upon it, the attempt to do so producing pain in the situation of the hip-joint." The patient died of heat-apoplexy just two months after the accident. (*Presented by Dr. J. B. Scriven.*)

- 115.** Extra-capsular fracture of the neck of the right femur, with a comminuted fracture of the great trochanter. No history.
- 116.** Impacted extra-capsular fracture of the neck of the right femur, from a native male, aged about 60, who died "from diarrhoea and exhaustion nine weeks after admission into hospital." The section made shows the impacted condition of the neck—driven into the cancellous tissue of the trochanter major,—and the attempt made at union, by means of short bands of fibrous tissue between the impacted fragments. This tissue, under the microscope, exhibits incipient calcification.
- 117.** "Comminuted fracture of the left femur involving the neck and great trochanter. From an old woman, upon whom a wall fell" (Colles). The main fracture passes from above, obliquely downwards and inwards through the upper part of the great trochanter, and along the anterior inter-trochanteric line to the

back of the bone, so as to completely separate the neck from the rest of the shaft.

118. A comminuted and impacted extra-capsular fracture of the neck of the left femur, with a considerable amount of callus thrown out around the fragments. The great trochanter has also been split through obliquely from above and in front, downwards and backwards. (Received from the Police dead-house.) No history.

119. Extra-capsular fracture of the neck of the right femur, combined with a vertical fracture of the great trochanter, passing through its centre, from above downwards, so as to separate it into two portions, the posterior and outer of which is detached from the rest of the bone. The neck and shaft of the femur seem to be much rarefied and softened.—From an East Indian woman, aged 60.

120. The upper portion of the left femur, showing an oblique fracture of the neck—partly extra-capsular, partly intra-capsular. Both trochanters have suffered much comminution, and a large gap is seen on the posterior surface of the great trochanter from the complete separation and loss of the fragments at this part.

The patient, a European sailor, died in hospital from shock and other internal injuries. "The fracture was caused by a fall from a height of about ten feet."

121. "Oblique fracture of the left femur just below the trochanter major." The lower fragment is sharply pointed and displaced in front of the upper. No union has taken place. The broken bone is merely held together by a portion of the adductor magnus muscle.

122. Comminuted fracture of the upper third of the shaft of the right femur, with partial union of the anterior and internal portions of two fragments by means of thick fibrous bands (periosteum). A great deal of new bone has been thrown out around the shaft both above and below the seat of fracture, yet no osseous union of the latter has taken place. (*Presented by Professor Harrison.*)

123. Oblique fracture of the left femur below the trochanters. A section shows that perfect bony union has been established. (Ewart.)

124. Oblique fracture, from above downwards, and from without inwards, of the upper third of the right femur, rather more than one inch below the great trochanter. On the posterior aspect of the shaft the fracture extends downwards in a linear form to the middle third, and the upper fragment is wedged into a V-shaped fissure formed by the broken bone.—From a native boy, an idiot, and subject to epileptic fits. The injury was the result of a fall during a fit, and at the same time a compound dislocation of the right elbow occurred, with much laceration of the soft parts, necessitating amputation at the middle of the arm.

125. Oblique fracture, from above and within, downwards and outwards, through the whole thickness of the shaft of the right femur, at about its centre.

A section shows that very perfect bony union has taken place, although there is a slight bending outwards of the shaft at the seat of fracture, which must have produced a certain amount of deformity. No history.

126. Fracture of the left femur at the middle of its shaft. The broken ends overlap each other for about four inches, and their opposed surfaces are held together by shreds of muscular fibre only.

127. Comminuted fracture of the right femur, at the upper part of the middle third of its shaft. The fracture was also compound. The comminuted pieces were removed during life.

On *post-mortem* examination the soft structures of the thigh were found almost pulpified. The patient, a European (male), died from "exhaustion" two days after admission into hospital.

128. The lower two-thirds of the left femur, with the upper thirds of the tibia and fibula. There is an old oblique fracture, from without forwards and inwards, of the shaft of the former (femur), at about its centre. The fractured ends of the bone override each other, but are firmly united by permanent callus in their unreduced position, thereby producing great deformity of the shaft of the bone.

There seems also to have been a fracture, or partial separation at any rate, of the outer condyle of the femur, which has likewise united firmly. Much new bone has been thrown out over the lower extremity of the femur and head of the tibia. The knee-joint was disorganised, and the bones of the leg displaced outwards. The left lower limb was an inch and a half shorter than the right. The specimen was obtained on *post-mortem* examination of the body of a native male patient, aged 40, who died in hospital from internal strangulation of the bowels. ("Medical *Post-mortem* Records," vol. II, 1878, pp. 947-48.)

129. "Fracture of the shaft of the left femur at the lower part of the middle third." The fracture is oblique, and its direction from above downwards and forwards. "Section shows that the bones have overridden each other about three inches. The upper fractured extremity, which is in front, has become rounded off, and the dense cortical layer formed over it is continued downwards and merged in that of the lower fragment. The same is noticed at the end of the lower fractured extremity, but it is comparatively irregular and rugged. Both the periosteal and cortical layers of the adjacent bones have been substituted by cancellated structure. The increased compactness of a part of this indicates the position where this transformation has been accomplished."

130. "Oblique fracture of the shaft of the left femur at its lower third. There is considerable overriding of the broken ends, each of which terminates in a conical bony point. Notwithstanding the great malposition that must have existed, the cortical and peri-

osteal structures of the opposed bones have been to a considerable extent joined by the development of new bone (forming solid bridges between them). The overriding is lateral, the upper fractured end lying outside the lower on the inner aspect." (Ewart.) The exposed medullary canal of each fragment has in great part been filled up by new bone.

131. Comminuted fracture of the lower third of the left femur, with necrosis of the shaft for from one to two inches above the seat of fracture. Considerable new bone has been thrown out around the broken fragments, but no union of the fracture has taken place.
132. "Fracture of the lower part of the femur, transversely and between the condyles, into the left knee-joint. The outer condyle has been pulled upwards more than half an inch, but sufficient osseous union has taken place to fix the parts firmly together. The upper broken end overrides the lower to the extent of three inches, and a sharp splinter or spicule projects considerably. The opposed bones have been united by a bridge of new bone, which is irregular and much perforated. The injury inflicted upon the knee-joint seems to have been repaired, for the condyles and articular surface of the tibia are healthy. Removed from the body of Charles Wilson." (Ewart.)
133. "Comminuted fracture of the lower end of the left femur, extending into the knee-joint." (Ewart.) The whole of the injury appears to be included within the joint. A transverse fracture is seen passing completely through the shaft of the femur, about two and a half inches above the condyles; a vertical fracture extends downwards from this, between the two condyles, completely separating them. A third is directed downwards and forwards on the outer aspect of the external condyle; and a fourth, connecting the two latter at their inferior terminations, chips off a portion of the articular surface of the same condyle.
134. Oblique "fracture of the left femur at the lower third. Section shows that, though the fractured extremities have overridden much and been maintained in an unfavourable position, bony union has taken place. The lower fractured end has been pushed up behind the upper broken extremity three or four inches, yet their ends have been blocked up and smoothed by the development and growth of new bone, and the opposed surfaces of both are joined by new cancellated structure, the opposing periosteal having become absorbed after having contributed to the formation of an osseous substitute. The deformity consists in thickening and irregularity at the seat of injury and repair, and bending or twisting of the femur forwards and outwards." (Ewart.)
135. A dry preparation from a case of compound comminuted fracture of the lower third of the left femur. The patient was a Mahomedan, aged 23, admitted into hospital on the 3rd January 1873. The injury was caused by a carriage-wheel passing over the thigh. The soft parts were not much lacerated. The wound was dressed antiseptically after the prominent ends of the bone

were removed, and the fracture reduced. The patient did well for upwards of two months, but then the knee-joint was found affected, and articular suppuration threatening, amputation of the limb was necessitated, and performed at the upper third of the thigh, on the 23rd of March.

The dry preparation exhibits in a very beautiful manner (1) the oblique and comminuted nature of the fracture, with displacement of the fractured ends of the bone (the upper outwards, the lower inwards and backwards); (2) an immense growth of new bone at the seat of, and for some distance above and below the same, with partial union and consolidation of the broken fragments by means of osseous arches thrown out between them; and (3) the superficially furrowed and roughened condition of the condyles of the femur (particularly the inner), the result of inflammatory changes within the knee-joint.

136. A dry preparation showing an oblique comminuted fracture of the left femur at its lower third. The fragments are greatly displaced, but have united to a considerable extent in their abnormal position by firm bony outgrowths. The fracture extends obliquely from within, outwards and downwards. The upper fragment has been displaced downwards, and its sharp pointed end, perforating the knee-joint, rests on the external surface of the outer condyle, and has a good deal of rough new bone thrown out around it here. The lower fragment has been drawn upwards and backwards. The medullary canal in this portion has been exposed for a considerable distance, and is seen partially filled up by newly formed bone. The sharp edges of the fracture have been rounded off to a great extent, but some sharp spicules still exist. The knee-joint was extensively disorganised, the cartilage over the condyles and head of the tibia eroded, the ligaments softened and partly destroyed.

The patient, a native female, aged 60, sustained these injuries, about two months prior to her admission into hospital, by slipping down a stone staircase. She was in a very low and depressed condition. Several large burrowing sinuses surrounded the lower part of the thigh and the knee-joint, and the discharge from these was so profuse that she died from exhaustion and diarrhoea before any operative interference could be attempted.

137. An oblique fracture of the left femur, at its lower third, directed from behind, forwards, downwards, and outwards. The upper fragment overrides the antero-external aspect of the lower, and in this situation must have perforated the knee-joint. It is remarkable how well the parts have adapted themselves to their abnormal position. Firm bands of fibrous tissue extend between the displaced fragments; these have been cut across posteriorly to display their structure. The ends of the fractured bone are rounded off to a considerable extent, and invested by thick periosteal tissue. The subject, a native male, aged 40, died from gangrene of the left leg and foot, the result of a recent injury (the fall of some heavy "iron-sheeting" upon the leg), and this old fracture of the femur, on the same side, was dissected

out at the *post-mortem* examination of the body. (*Presented by the Police Surgeon, Calcutta.*)

138. A dry preparation, from a case of compound comminuted fracture at the lower third of the right femur. The bone is greatly splintered at the seat of injury, and a vertical fracture through the centre of the condyles extends into the knee-joint.

The patient, a native woman, fell off the roof of a house, a height of about 22 feet. Besides this fracture of the thigh, she sustained a Colles' fracture of the right radius, fracture of the nasal bones, and a double fracture of the lower jaw. She was brought to the hospital in a collapsed and semi-insensible condition. The thigh was amputated, but she sank on the fourth day after the operation.

139. "Specimen showing extensive comminuted fracture of the ('left) femur below the trochanters, and embracing a considerable portion of its upper third." (Ewart.) The case is as follows:—"Gunner William Radcliffe, aged 27, was wounded at the battle of Goozerat on the 21st February 1849 by a round shot striking the upper and anterior part of the left thigh, by which the bone was splintered a little below the neck, and the soft parts much injured. He was brought into Lahore on the 3rd April, and on the 6th, forty-four days after the receipt of the injury, amputation at the hip-joint was performed. The wound, at first affected with gangrene, eventually did well; but in the process of healing his constitution, previously weakened by profuse suppuration, gave way, and he sank under the prolonged debilitating effects of so severe an injury. He died on the 20th of the same month, fourteen days after the operation, sufficiently long to prove the success of the operation itself, and to render it apparent that, had the limb been removed some time before, the chances are he might have recovered." (*Presented by Surgeon P. F. H. Baddeley, Artillery Division, Lahore.*)

- 140 "Comminuted fracture of the upper third of the left femur, with imperfect formation of new bone adhering to the upper and lower fractured extremities, as well as to the comminuted portions affected through their periosteal aspects.

"The subject of these was a Burmese, who was shot through the thigh, at the capture of Rangoon, on the 13th or 14th of April. He was brought to the field hospital some days afterwards. He died on the 4th August 1852 from debility and exhaustion, produced by the discharge from the wound, and an attack of diarrhoea. The thigh was full of sinuses, extending in all directions, and the cavity of the callus also contained a quantity of pus. There was no opportunity of performing amputation. The man's condition when brought to hospital precluded it, and subsequently it was not deemed advisable." (Ewart.) (*Presented by Dr. Fayer, Field Hospital, Rangoon.*)

141. Comminuted fracture of the upper third of the left femur, the result of a musket-shot. (Ewart.) "Moung Shine-Ko, a Burmese, aged about 30, received a musket-shot in the upper

part of the left thigh on the 15th of February 1853, causing fracture of the femur into the hip-joint. Amputation at the hip-joint was immediately performed * * * * After recovering from the shock, which appeared to have been very great, the patient continued well until the 5th March, when symptoms of tetanus supervened, and carried him off on the 17th." (Abstract from case.) (*Presented by Dr. Fayrer, Officiating Civil Surgeon, Rangoon.*)

142. A large fragment of the femur, with a portion of attached muscle, removed from the right thigh of a lascar, who was shot through both thighs by a tiger-trap on Saugor Island. (Colles.)

143. "Transverse fracture of the middle third of the (left) tibia and fibula." (Ewart.) The whole length of the shafts of both bones is greatly thickened and roughened from inflammatory changes—ostitis and periostitis,—the tibia in particular exhibiting great density of its compact tissue (sclerosis).

144. Oblique fracture of both bones of the left leg at the junction of the middle and lower thirds of their shafts. The fractures are directed from without, downwards and inwards, and the upper fragments override the lower for from one to two inches, yet complete bony union of the opposed surfaces has taken place, and the tibia and fibula are also joined together at the seat of injury by a thick, firm bridge of osseous tissue.

145. "Fracture of the right tibia and fibula, near and into the ankle-joint." (Ewart.)

The injury seems to have been an oblique fracture, from above, downwards and inwards through both bones, about two and a half inches above the ankle-joint; the inferior extremity of the tibia being further broken into at least three pieces, and the ankle-joint itself thus implicated. Firm bony union has taken place, chiefly by means of strong bridges of new bone thrown out between the fragments, and the two bones are thus also joined together. The lower end of the fractured fibula overrides the upper for about half an inch.

146. Compound comminuted fracture of the right tibia and fibula, exposing the ankle-joint. No history.

147. A dry preparation from a case of "compound comminuted fracture" at the middle third of the left tibia and fibula. Both bones have undergone very extensive splintering at the seat of fracture. The fragments have been put together artificially.

148. Compound fracture of the right tibia and fibula, implicating the ankle-joint, and producing dislocation of the foot outwards. No history.

149. Compound fracture of the right tibia and fibula, at about the centre of their shafts. The injury is said to have been "of six months' standing," and "from a native patient aged 35 years."

The bones have necrosed at the seat of fracture, and show no attempt at repair.

150. Transverse fracture of the left tibia and fibula, at a little below the centre of the shafts.—From a native woman, aged 25. Both bones of the right leg were also fractured, and on each side the

fracture was compound. At the seat of injury (and in the tibia, at a spot about three inches above the same), the bones are superficially necrosed and roughened. Abscesses connected with the diseased bone burrowed among the soft parts on the anterior and outer aspects of the leg. The knee-joint became affected, and at last amputation at the lower third of the thigh had to be performed.

151. Compound fracture of the left tibia and fibula, with dislocation outwards of the foot, also compound. In the tibia the fracture passes through the base of the internal malleolus, as well as involving a triangular piece at the lower extremity of the same. The fibula is broken about an inch above the joint. The ankle-joint is freely exposed. "The surrounding soft parts were found much lacerated and contused, but the tibial arteries were uninjured." Amputation at the middle third of the leg was necessitated.

From a native named Bákshá, who was run over by a carriage in the streets, the wheels passing over his leg and foot.

152. Oblique fracture, from above downwards, and from without inwards, of the right tibia and fibula. In the former at its lower, and in the latter at its middle third. The fracture was a compound one, and the leg had to be amputated below the knee-joint.--From a native named Indro.

153. "Comminuted fracture of the right tibia, extending into the knee-joint. The head of the fibula is also fractured. Amputation was performed above the joint." (Colles.) (*Presented by Dr. Herbert Baillie, Chandni Hospital.*)

154. A very beautiful preparation, showing an old fracture of the right tibia and fibula, at about the centre of the shafts, with displacement inwards and forwards of the upper fragments, which have united in this position, and are connected together at the site of fracture by strong bridges of newly formed bone. The lower end of the upper fragment of the tibia projects forwards considerably, but is smooth and conical (rounded off). The lower fragments are embossed with rough, rugged, almost coral-like, newly formed bone, the result probably of the excessive reaction of the periosteum investing them. There is ankylosis of the ankle-joint.

No history of this case has been preserved, but in all probability the fractured bones were never "set" (reduced),--simply allowed to unite as best they could. The preparation is therefore most interesting in showing the very great amount of natural repair possible, even in such an extensive injury.

155. Compound comminuted fracture of the lower third of the right tibia and fibula. The ankle-joint was exposed, and several of the tarsal bones crushed. The injury was produced by the fall upon the leg and foot of a heavy block of wood. Amputation had to be performed at the junction of the middle and upper thirds of the leg. Both bones are seen to be extensively splintered, chiefly in a longitudinal direction, and the tips or extremities of the internal and external malleoli are broken off. The fractures communicate freely with the ankle-joint.

- 156.** Compound comminuted fracture of the lower end of the left tibia, with fracture of the malleolar extremity of the fibula, and dislocation, forwards and outwards, of both bones of the leg. The ankle-joint is freely exposed.

The patient, a native woman aged 30, had fallen from a height of about ten feet, and thus sustained the injury. The leg was amputated at the junction of the lower and middle thirds.

- 157.** Transverse fractures of the right tibia and fibula at their lower thirds, the former of which was compound, the latter simple.

The patient, a Hindu aged 25, was brought into the hospital about six hours after the receipt of the injury, which was produced by the fall of a bale of cloth upon his leg. He was very weak and emaciated, had an enlarged spleen, and had been suffering for some time from malarious fever. The fractures were reduced and the wound dressed antiseptically. The patient did well until the fourth day of his admission, when secondary hæmorrhage occurred, and he became very low. The blood extravasated into the neighbouring tissues gave rise to gangrene, and consequently amputation had to be performed at the knee-joint. The flaps, however, sloughed, and the man died exhausted on the fifteenth day after the operation.

- 158.** Preparation showing a comminuted fracture of the lower third of the left tibia and fibula, which was also compound.

The fracture in the latter bone is for the most part transverse in direction, but has also completely detached a small portion of the inner compact tissue of the shaft. That through the tibia passes from without, inwards and downwards, producing not only detachment of several fragments, but extensive fissuring of the shaft.

The injury was brought about by the shifting of a heavy fresh-water pump in consequence of a sudden lurch of the vessel, while the patient (a Mahomedan carpenter, aged 31) was engaged in closing a port-hole on board one of the pilot-brigs off the Sandheads. No attempt was made to reduce the fracture, but the leg was tightly bandaged, and the man was sent into hospital five days after the accident. Gangrene had then set in, and extended from the foot to the knee. Amputation at the lower third of the thigh was at once performed, but the man died from exhaustion and shock within twenty-four hours of the operation.

- 159.** The right tibia and fibula from a case of compound fracture of the leg, occurring in a native male (an idiot), who fell from a height of about twelve feet.

In the tibia the fracture is an oblique one, running from above downwards and outwards through the entire thickness of the shaft, commencing at the middle, and terminating at the lower third of the bone. In the fibula, the fracture is situated at the upper third, is also oblique, takes the same direction, and, from its upper end, a narrow fissure is prolonged for half an inch into the outer aspect of the shaft.

160. The bones of the right leg, from a case of compound comminuted fracture.

The subject was a native boy, aged 10 years, who was run over by a railway-train. Amputation was performed at the lower third of the thigh twenty hours after the accident. The patient survived the operation only five hours. It will be seen that the tibia, at its middle third, has been most extensively comminuted. Three large fragments of the shaft, which had completely separated, have been artificially replaced, and show that the splitting up of the bone was chiefly in the longitudinal axis. The fragments from the anterior aspect of the bone are wanting, and a large gap exists here.

At the upper third of the fibula the bone is also greatly comminuted, a transverse fracture passing almost through the bone on its outer aspect, a bending (not complete fracture) two inches below this, and five longitudinal fissures converging towards the same spot. The bones of the foot are uninjured.

161. Compound fracture of the left tibia at the upper end of the shaft, just below the superior epiphysis, with separation of the latter, and of the fibular epiphysis. The fibula is also fractured about an inch below its upper extremity.

The subject was a native boy, aged six years. The injury was caused by a heavy bale of cotton falling upon his leg. There was much displacement of the upper fragment of the fractured tibia, and considerable injury to the knee-joint. The limb had therefore to be amputated at the lower third of the thigh.

162. Compound comminuted fracture of the right leg from gun-shot injury. Amputation was performed through the knee-joint.

The shaft of the tibia, at its upper third, is extensively splintered, no less than six fragments or spicula being found on dissection, and which are now placed in position in the preparation. They are all of irregular outline, with sharp edges and pointed angles. The fibula has sustained a transverse fracture through the whole thickness of its shaft, a little below the level of the seat of injury to the tibia.

The patient, a native male, aged 23, was firing off a small toy-cannon, and accidentally received the charge in his leg.

163. An oblique fracture, from without downwards and inwards, of the left fibula. It shows "little or no attempt at repair." Possibly this is due to the line of fracture passing through or very close to the medullary foramen, and thus interfering with the principal nutrient supply of the bone. The fibula is uninjured. No history.

164. "Compound comminuted fracture of the right tibia" at its upper third. (No history.) The lower fragment is seen projecting through the soft parts.

165. "Compound fracture of the (left) tibia," at about the centre of the shaft. The upper fragment overrides the lower, and projects for more than two inches through the soft parts. The line of fracture is transverse. No history.

166. Fracture of the right tibia, at the centre of the shaft, slightly oblique in direction from above downwards and outwards. From a native male (Jaffer Alli). The fracture was compound. The fibula remains uninjured.
167. Comminuted fracture of the right tibia, at about its middle third. There is much superficial caries and exfoliation of bone around the site of the fracture, and extending upwards on the outer and posterior aspects of the shaft. The fracture was compound.—“From a native male (Shaik Farrid), aged 22; admitted into hospital on the 31st December 1868. Amputation at the upper third of the thigh performed, 20th January 1869.”
168. A dry preparation from a case of compound fracture of the right tibia, at the centre of the shaft. The injury was produced by a cart-wheel passing over the leg of a native boy, aged 14. There was much laceration and contusion of the soft parts, and amputation at the lower third of the thigh had to be performed. The fracture of the tibia is incomplete, its direction transverse. The anterior prominent margin or “shin” remains unbroken, holding together the upper and lower fractured portions of the bone, which, moreover, at the line of separation, show a very curious dovetailing of their margins into each other. The shaft has been bent a little inwards. The fibula was found uninjured, and the epiphysis of the tibia not affected.
169. “Compound comminuted fracture of the lower third of the (right) tibia.” (Ewart.) No history.
170. “Compound comminuted fracture at the lower third of the (left) tibia.” (Ewart.) No history.
171. A double fracture of the left tibia. One is situated at the junction of the upper and middle thirds, the other, at the lower third of the shaft of the bone. Both fractures are oblique, and directed from without, downwards and inwards. “The soft parts were much lacerated,” but the fibula remains entire throughout its extent.—“From an adult native male patient.”
172. A dry preparation from a case of compound comminuted fracture of the tibia at its lower third. This bone has been broken into no less than eight irregular-shaped large and small fragments, and the ankle-joint implicated thereby. (The fibula is said to have been also fractured about two inches above the malleolus.) There is no history preserved of the cause of this extensive injury, but it is recorded that “gangrene supervened ten days after, and amputation had to be performed in consequence at the lower third of the thigh.” (Ewart.)
173. “Fracture of the right fibula (oblique), within three inches of the malleolus, overriding fully two inches. Union between the opposed surfaces is complete notwithstanding,” and has been effected by means of strong bridges of new bone.
174. Oblique “fracture of the right fibula, within four inches from the head; overriding of an inch of the fractured ends; very complete (bony) union.” (Ewart.)

175. Preparation showing a perfectly united oblique fracture of the right fibula, directed from above, downwards and inwards, two and a half inches above the ankle-joint.

There is considerable superficial caries of the astragalus and articulating surface of the tibia, and a roughened and eroded appearance of the lower three inches of both bones of the leg, the result also of inflammatory changes. The ankle-joint was involved.

From a native male, aged 55, who was run over by a carriage in the streets. An attempt was made to save the limb, but ultimately amputation at the upper third of the leg had to be performed.

176. Compound fracture of the left fibula, producing an oblique splitting of the bone from a point on the outer side of the shaft, two and a half inches above the ankle-joint, downwards and inwards into this articulation. A portion of the external malleolus appears also to have been chipped off.

There is no fracture of the tibia, but the inferior tibio-fibular articulation was involved, and both bones are here roughened and superficially carious, as also is the whole of the lower fragment of the fractured fibula. This, the result of prolonged periostitis, with burrowing sinuses in the neighbourhood of the joint, necessitated amputation of the leg.

177. Pott's fracture of the left fibula. The fracture, situated about an inch and a half above the tip of the external malleolus, passes obliquely, from without inwards and downwards, through the shaft and into the ankle-joint. Portions of the anterior and external ligaments of the joint are ruptured. (There is also a fracture of the first phalanx of the second toe.)

Taken from a Mahomedan woman, aged 35, "who fell upon a heap of broken glass." She died thirteen days after the accident from traumatic tetanus.

178. Comminuted fracture of the os calcis, and first, second, third, and fifth metatarsal bones. No history. (*Presented by* Professor Allan Webb.)

179. Comminuted fracture of the os calcis. "The principal fracture extends from below and in front, upwards and backwards to the posterior edge of the articular surface corresponding to the astragalus. A portion of this surface was detached and lying loose in the joint. The calcaneo-cuboid ligament had torn off the piece of the os calcis to which it is attached." (Colles.)

The case of Mrs. K., aged 42, who fell from the upper story of a house, landing on her left heel. Traumatic gangrene set in, and amputation had to be performed above the knee.

180. A dry preparation from a case of compound comminuted and multiple fracture of the right tarsus and metatarsus. Foot amputated by Syme's operation.

The fractures involve the heads of all the metatarsal bones except the fifth, the first being extensively splintered. The internal cuneiform, base of the second metatarsal bone, the cuboid, and os calcis also show fracture or chipping-off of portions of their structure, and the first phalanx of the third toe transverse fissuring at about its centre.

181. The left os calcis of a native (male), aged 40, who sustained a compound comminuted fracture of this bone in a gun-powder explosion on board a torpedo-vessel in the river. The injury was caused by a piece of iron forcibly striking the outer side of the left foot. Several detached fragments of the bone were found loose in the wound, which was large and lacerated, involving the ankle-joint and lower third of the leg. Amputation at the upper third of the leg was performed.
182. A dry preparation of the left foot of a native, aged 40, crushed by the passage over it of the wheels of a railway carriage. The tarsal bones are uninjured, but all the metatarsal bones are fractured from half an inch to an inch above their heads, the line of fracture passing transversely through them. The proximal phalanx of the little toe is also completely fractured a little above its base. All the other phalanges of the toes have escaped. The laceration of the soft parts was so extensive that amputation (Syme's) had to be performed.
183. "Complete dislocation of the head of the left femur on to the back of the ischium." The capsular and cotyloid ligaments are ruptured, and the external rotator muscles partially torn through.
184. "Compound dislocation of the right tibia at the knee-joint, with separation of the upper epiphysis. No fracture of the femur or fibula. The ligamentum patellæ, the patella, and the quadriceps tenden, are uninjured. The integuments have been torn across a little above the ankle, one portion has been stripped back off the foot (having given way along the dorsum of the first metatarsal bone) and remains attached only to the toes, the other has torn up the front of the leg, and has been stripped from the leg and thigh nearly as high as the site of amputation. The case of a native girl (Nattia), aged 4, run over by a train on the municipal railway at Sealdah.
The right thigh was amputated above its centre. The patient rallied after the operation, and survived it for upwards of twenty-four hours, dying, however, of shock and exhaustion." (Colles.) (*Presented by* Professor J. A. P. Colles.)
185. Compound dislocation of the left ankle-joint, with fracture of both bones of the leg. The astragalus with the rest of the foot is displaced forwards. The tibia is broken off nearly transversely, about three-fourths of an inch above the joint, the fibula about three and a half inches above the same. The upper fragment of the former protrudes for nearly three inches through the soft parts on the inner side of the ankle-joint.
186. Complete dislocation (compound) backwards of the left foot. The tibia, removed from its articulation with the astragalus, is pushed forwards and a little inwards through the soft parts, and almost all the ligaments of the ankle-joint have been torn through. No history. (*Presented by* Dr. Esdaile.)
187. Compound dislocation of the foot outwards, with fracture of the fibula about two and a half inches above the ankle-joint, and

protrusion of the lower extremity of the tibia through the soft parts on the inner and anterior aspects of the joint. No history.

188. "Compound dislocation of the left ankle, with fracture of both malleoli (which remain attached to the foot), and protrusion of the tibia and fibula through the wound on the outside of the joint. The epiphyses of both bones separated on the third day after the injury. Amputation was performed through the middle of the leg." (Colles.)

189. Multiple fractures of the bones of the lower extremity.

The preparation exhibits "fractures of the right femur, tibia, and fibula in a native, sustained in the great cyclone of 5th October 1864."

The ends of the fibula override slightly, and are united by their sides, which come into contact. The fragments of the tibia are everywhere one-fourth of an inch apart, but are united by a large mass of callus formed on the outer side of the bone, nearly filling the interosseous space. The gradual "modelling" of the fractured bones is well illustrated; the separate ends of the tibia are well rounded off, though the medullary canal is still open (after eight months) in both bones.

The femur has been broken across, nearly transversely about the middle, and a second fracture, running downwards from the first through the lower fragment, separated a piece of bone on its outer side. This has reunited to the lower fragment, but no union between the two main fragments ever took place; on the contrary, their ends are well rounded, showing that considerable motion persisted between them. Mr. Partridge inserted two ivory pegs (which still remain) in the outside of the upper fragment. This led to the formation of some callus at the back of the upper, and in front of the lower, fragment; but before any further improvement could take place the man died of pyæmia." (Colles.) (Presented by Professor S. B. Partridge, F.R.C.S.)

190. A section from the base of the skull of a horse, showing a comminuted fracture. The cause of the injury not known. "The animal was found dead in his stable." (Presented by R. S. Hart, Esq., M.R.C.V.S., Calcutta.)

191. "Fractured rib of an ox, partially united." (Ewart.)

192. "Transverse fracture of the body of the scapula of a sheep." (Ewart). A large amount of ossifying callus surrounds the fracture.

193. "Fracture and imperfect union of the bones of the wing of an adjutant (*Leptoptila argala*, Linn.), showing to great advantage the provisional callus which has encased the broken ends of the bones." (Ewart.)

194. "Section of the femur of a hog (*sus Indicus*), which had been fractured at its middle. The bones have overridden each other, but complete bony union has been effected." (Ewart.)

195. "Fracture of the femur of a pheasant. The bones override, but the opposed surfaces, though separated a quarter of an inch, are joined by bony material." (Ewart.)

196. A dry preparation of the forefoot of a young "Waler" (horse), showing comminuted fracture of the sesamoid bones. (*Presented by R. S. Hart, Esq., M.R.C.V.S., Calcutta.*)
197. Compound comminuted fracture of the left patella. The injury is best seen from the inferior surface of the bone. The principal fracture extends from above, downwards and inwards, through the whole thickness of the inner third of the bone, which is separated from the rest, and broken into three unequal fragments. These are held together by the fibrous expansion of the ligamentum patellæ which passes over the front of the bone. The outer half of the patella exhibits, near its lower margin, two distinct fissures in the articular cartilage investing its under surface, these enclose between them a triangular portion of the latter which has almost exfoliated.
- The knee-joint was implicated. An attempt, however, was made to save the limb; but, acute suppurative synovitis ensuing, with burrowing abscesses on the inner side of the leg and thigh, amputation had to be performed, about two inches above the joint, on the 19th day after admission. The patient, a Mahomedan, aged 25, by occupation a mason, died on the fifteenth day after the operation from exhaustion and septicæmia.
- The fracture was the result of a fall from a three-storied house. He sustained at the same time a Colles' fracture of the right radius and other minor injuries.

DISEASES OF THE BONES.

SERIES II.

DISEASES OF THE BONES.

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DISEASES OF THE BONES.

1. Enormous concentric hypertrophy and increased density of the calvarium. In the situation of the frontal eminences the section is very dense, and measures about half an inch in thickness. The bone is also considerably thickened at the parietal prominences. This increased density is seen to be chiefly due to hypertrophy of the diploë.
 2. Hydrocephalic head. The eccentric hypertrophy of the bones of the skull, and the remarkable development of Wormian or supernumerary bones are well seen. The latter are found in double rows, interdigitating, in the lambdoid, sagittal, coronal, and both squamous sutures. One hundred and twenty-three of these accessory bones can even now be counted lying between the sutures, and many have dropped out and been lost. The largest are situated posteriorly, in the situation of the corresponding fontanelle, and also laterally, at the junction of the anterior inferior angles of the parietal bones with the greater wings of the sphenoid. A very large Wormian bone, moreover, occupies the situation of the anterior fontanelle. It measures $2'' \times 1\frac{7}{8}''$. A portion of the vault of the skull, especially in the left temporal and superior occipital regions, is wanting. The circumference of the skull measures twenty-eight inches; longitudinally (from root of nasal bones to occipital protuberance) twenty-two inches; across, from one mastoid process to the other, twenty and a half inches; base of skull (from nasal process of superior maxillary bones to posterior margin of foramen magnum), four and seven-eighths inches. From these measurements it will be seen that the bulk of the hypertrophic development of the bones is due to the expansion of those composing the vault of the cranium, while those at the base are about normally developed.
 3. "A portion of the calvarium, exhibiting great hypertrophy of the frontal bone. Both tables and the intervening cancellated structure are equally affected, and there is superficial caries of the external and internal surfaces." (Ewart.) No history.
 4. Syphilitic hypertrophy of the bones of the skull. From a native male (Abdoola), a Madrasee. The hypertrophy affects chiefly the frontal and left parietal bones, and, as may be seen from a triangular section made through the whole thickness of the former, is produced chiefly by an overgrowth of the diploë between the inner and outer tables. Viewed externally, the skull is also unsymmetrical, the left frontal and parietal regions being more prominent than the right.
- The occipital bone is greatly thickened, notably in the situation of the Torcular Herophili. There are also four large Wormian bones at the junction of the lambdoid and sagittal sutures (posterior fontanelle). The whole of the inner surface of the middle fossa of the skull, and of the left frontal and parietal bones, has a roughened, irregularly eroded, and also thickened appearance from active inflammatory changes. In this situation a large gummy

tumour was found closely adherent to the bone and dura mater, and pressing upon the left cerebral hemisphere.

5. The vault of the skull, showing a greatly hypertrophied and massive condition of the bones, especially of the frontal, which, at its normal centres of ossification, is quite three-fourths of an inch in thickness. This thickening is principally due to an expansion and condensation of the diploë. Viewed from the interior, the coronal suture is seen to be quite obliterated, and the sagittal and lambdoid sutures nearly so.

The dura mater was unusually adherent: the anterior cerebral convolutions flattened.

There was a small gummy growth at the junction of the left optic thalamus and corpus striatum, and thrombosis of the basilar artery.—
From a European female, aged 40.

(See further "Medical *Post-mortem* Records," volume I, 1875, pp. 701-702.)

6. The anterior half of the skull cap, showing great concentric hypertrophy, probably syphilitic. The frontal bone is especially thickened, and measures from half to three-fourths of an inch at a distance of about two inches above the orbital arches. The thickening is seen to be due to an expansion and development of the diploë, which, in the fresh state, was rosy-pink in colour and abnormally vascular.

The dura mater was unusually adherent to the bone in the frontal region, and the inner surface of the latter (bone) a little rough, irregular, and thickened, but the brain substance below was normal. There were gummy growths in the liver, and contracted and amyloid kidneys.—From a native woman, aged about 40.

("Surgical *Post-mortem* Records," volume I, 1877, pp. 381-82.)

7. Greatly thickened vault of the skull; the bone particularly solid and hypertrophied in the frontal region; probably syphilitic.—
From a European male, aged 45.

(See further "Medical *Post-mortem* Records," volume III, 1879, pp. 377-78.)

8. "Extreme atrophy of the calvarium. Both tables and the intervening osseous tissue are remarkably attenuated, and the external and internal surfaces are smooth and shining. The parietal and frontal bones are not more than the tenth or eighth of an inch in thickness." (Ewart.) (*Presented by* Professor H. H. Goodeve.)
9. "Calvarium of a Hindu skull (found on the river bank near Barraekpore), showing complete closure of the coronal, lambdoid, and sagittal sutures. They are completely obliterated externally; slight grooves indicate their position internally." (Colles.)
10. Congenital syntosis of the occipital bone and atlas. The specimen was found among a number of other dried and detached bones of the skull, in the dissecting-room collection, so that the sex and age of the subject are unknown; but, judging from the size and delicate structure of the occipital, it probably belonged to a child or young adult. The atlas is completely conjoined to the base of the occipital bone, except at the posterior margin of the foramen magnum, where a narrow slit,

about half inch in length and three lines in breadth, intervenes. The occipital has no condyles; they are merged, as it were, into the lateral masses of the atlas. The inferior articular processes of the latter are normal. The anterior and posterior condyloid foramina of the occipital are well-formed and distinct. The anterior arch of the atlas is perforated by a rounded foramen, immediately above the tubercle.

There is no evidence of any disease (caries, &c.) of, or around, the conjoined bones.

11. Microcephalic skull of an idiot, a native, aged about 14; height four feet eight inches. The weight of the cerebrum was six and a half ounces; cerebellum, two and a half ounces; pons and medulla, one-fourth of an ounce. The "convolutions were rather flatter than usual, and the middle lobe was less prominent than usual below: otherwise the brain was normal."

The greatest circumference of this skull is thirteen inches; transversely, from the root of one zygoma to the opposite, seven and a quarter inches; longitudinally, from root of nose to occipital tuberosity, seven inches.

The occipital region is much flattened, and there is evidence of inflammatory thickening of the inner table and diploë in this situation. The lesser wings of the sphenoid are also unusually thick and massive. The capacity of the skull is greatly reduced; the facial angle thrown forwards; the superior maxilla and incisor teeth very prominent. (*Presented by Dr. Loch, Civil Surgeon, Bareilly.*)

12. The calvarium of a "half-caste woman" exhibiting a depression in the external table, the size of a half-crown piece. The edges are smooth, rounded, gradually bevelled off. The diploë has been absorbed, and the internal table perforated, the aperture in the latter being about the size of a fourpenny piece. At this spot the pericranium and dura mater are blended together, but the latter is not opened.

The depression in the vault is situated at the junction of the coronal and sagittal sutures, and immediately above the superior longitudinal sinus, the channel of which, however, remains quite unaffected. This lesion is "supposed to have been the result of a fracture of the skull some years back, the gap having been partially repaired by the deposition and organization of lymph into a strong lamina of adventitious structure," but the appearances on careful examination leave scarcely any doubt that the loss of osseous tissue and consequent gap has been due to the growth and subsequent absorption or evacuation of a syphilitic node. No fissuring or depression of the inner table can be detected. (*Presented by Professor Norman Chevers, M.D.*)

13. Base of the skull from a case of cancerum oris following malarious fever. The whole of the superior maxilla, as also the right pterygoid process of the sphenoid, a portion of the body of this bone, and the right half of the lower jaw, are rough, and were found denuded of periosteum. The posterior ethmoidal cells and

those within the body of the sphenoid exhibited a very softened and friable condition of their bony dissepiments. The middle lacerated foramen and the foramen ovale had their bony margins denuded, and the dura mater lining the same (continuous with the external periosteum) was thickened, soft, pulpy, and of an ash-grey colour. The dura mater investing the right middle fossa was stained greyish-yellow, was thickened, and soft for the space of about a square inch immediately above this spot, and a corresponding portion of the brain substance was pulpified and pinkish-grey. This consisted of the anterior extremity of the middle cerebral lobe, forming the posterior and inner boundary of the right fissure of Sylvius. The periosteal inflammation had therefore spread by direct continuity of structure from the exterior of the skull (through the middle lacerated and oval foramina) to the internal dura mater and contiguous cerebral substance. Towards the close of life there were cerebral symptoms, convulsions, &c.

14. Syphilitic caries and chronic ostitis of almost the whole of the frontal bone, reaching downwards to the left malar, and outwards into the temporal fossa. The bone is peculiarly and characteristically eroded in small pitted circles, which are bordered by slightly raised ridges of newly formed bone. The disease spread to the interior of the skull, as may be seen by the roughened state of the right half of the anterior fossa, and was evidenced during life by the development of meningo-cerebritis, associated with epileptiform fits, and the discovery, after death, of an abscess in the right anterior cerebral lobe, immediately beneath the inflamed bone and membranes.
15. Extensive caries of the frontal bone. On the right side the whole of the external table and a portion of the diploë have disappeared, and an excavation, about the size of a rupee, remains. It has a slightly raised, roughened, and irregularly rounded margin. On the left, central necrosis of a portion of the whole thickness of the skull exists,—an islet of dead bone, surrounded by irregular serpiginous, carious ulceration. Considerable hypertrophy of the bone is observed where not thus affected. Although no history is attached to this preparation, the conditions presented appear to be undoubtedly due to syphilitic changes. (*Presented by Dr. F. Oxley, of Singapore.*)
16. Caries, leading to perforation of the skull. The central portion of the frontal, the left half of the coronal suture (at its centre), the interior extremity of the sagittal suture, and the posterior margin of the left parietal, are the situations where the disease has manifested itself: in addition to which, caries without perforation of the left half of the frontal bone exists over a space the size of an eight-anna piece, the external table and a portion of the diploë having been absorbed.

These carious patches are said to have been found “lying underneath scrofulous tumours.” “The sagittal, squamous, and lambdoidal sutures are ossified.” (*Presented by Dr. F. Oxley, of Singapore.*)

17. Caries (with perforation) of the adjacent borders of the frontal and left parietal bones. "Both tables have been completely destroyed," leaving an irregularly rounded opening rather larger than a shilling.

The ulcerative process is much more marked and extensive in the interior of the skull, and appears to have commenced there, spreading gradually through the diploë, and finally reaching the surface and producing perforation.

18. "Superficial caries of the outer table of the left, and of a small part of the right, parietal bone; also of a very small portion of the occipital bone. On the internal aspect of the frontal bone there are several excavations, interspersed with osseous protuberances." (Ewart.)

The changes are probably syphilitic. The internal nodes referred to are symmetrical, being placed in exactly similar positions on either side of the median line (groove for longitudinal sinus).

19. A portion of the calvarium of a native woman, showing a perforation as large as a four-anna piece through the right parietal bone, close to the sagittal suture, and encroaching upon the longitudinal sinus below, the groove for which is very indistinct. The bone is particularly firm and massive; sutures all united. The lesion was caused by the perforation of a syphilitic node through the calvarium. The external table is bevelled and carious for about half an inch round the margins of the opening, and the internal table is similarly affected.

20. "Necrosis of the bone forming the left frontal eminence and root of the nose. The patient, a native, was admitted into hospital with syphilitic ulcers on the forehead, which destroyed the periosteum and caused necrosis of the frontal bone. On *post-mortem* examination it was found that the ulceration had passed through, and that the dura mater was adherent. A great quantity of serum was lying between the dura mater and arachnoid, and in the ventricles of the brain, which was generally softened, especially its anterior lobes."

The syphilitic character of the lesions, consisting of islets of necrosed, but not absolutely separated bone, lying surrounded by irregular, serpiginous, carious ulceration, is well seen in this specimen. (*Presented by Professor Allan Webb*)

21. Necrosis of the root of the right pterygoid process of the sphenoid, said to be the result of syphilis.

22. Necrosis of a portion of the frontal bone, immediately above the right supra-orbital ridge. The sequestrum, about the size of a rupee, is completely isolated, but remains *in situ* surrounded by a deep groove of carious ulceration. "There was found an effusion of thick pus at the base of the brain, limited anteriorly by the optic commissure, posteriorly by the inferior vermitorm process of the cerebellum, and laterally by the optic tracts, crura cerebri, and the sides of the pons Varoli and medulla oblongata. There was also pus between the skin and necrosed bone, communicating with the interior of the skull." (*Presented by Professor Allan Webb.*)

23. The calvarium, with the dura mater, and a portion of the brain from the body of W. J. S., aged 43, who died from abscess of the brain. He was admitted on the 18th July 1870 with a neglected contused wound of the scalp (near the left parietal prominence), which had been followed by necrosis of the subjacent bone. The patient became hemiplegic (right) on the 30th July, and on the 31st, aphasic. A circumscribed piece of the necrosed bone was removed by trephining on the 1st August, after which there was recovery of power in the limbs, and partially also of speech. This lasted until the 18th August, when the man again became hemiplegic. Another portion of bone, near the site of the first trephine hole, was now removed, but with no benefit, the patient dying on the 23rd, or seven days after this second operation. The calvarium on its outer surface was found quite carious and necrosed, the dura mater unusually adherent, and partially covered with sprouting granulations. The brain substance had begun to protrude through the aperture made by the trephine, &c. "An abscess, the size of a hen's egg, was discovered in the left lateral hemisphere, near the left fissure of Sylvius. The left corpus striatum and optic thalamus were softened on the surface, shaggy in appearance, easily washed away by a gentle stream of water, the optic thalamus, indeed, partly broken down."
24. "Anterior part of calvarium of an East Indian woman, aged 38, admitted on 4th July 1867 with a lacerated wound in the forehead: died 25th July. The portion of bone corresponding to the wound was found stripped of periosteum, and a groove of demarcation (necrosis) was beginning to form between it and the sound bone. This is well seen in the preparation. There was softening of the corresponding portion of the dura mater, and pus effused between the pia mater and the brain, for a space of two inches antero-posteriorly, by half an inch laterally, the layer of pus being one-twentieth of an inch thick. The pus was effused on the upper surface of each hemisphere close to the longitudinal fissure, the centre of the effusion corresponding to the exfoliation of the outer table." (Colles.)
25. Two portions of exfoliated (necrosed) bone from the frontal region of the skull. Each piece is about an inch square, of irregular outline, and presents a curious honeycombed and perforated condition, with thinning of the compact tissue of the outer and inner tables, and almost complete absorption of the intervening diploë.
26. "Section of an osseous tumour removed from the left cheek of a native of Bengal." (Ewart.) The growth is about the size and shape of a walnut, and appears to be a spongy osteoma. (*Presented by* Professor Brett.)
27. An ivory exostosis, about the size of a nutmeg, from the posterior aspect of the skull. It has developed from the occipital bone, a little to the left of the median ridge, and below the tubercle. Was found on *post-mortem* examination of a native female, aged 30, who died in hospital of puerperal pyæmia. The little

growth has been bisected, and presents a smooth, very hard, dense, and ivory-like structure.

28. The anterior half of the base of the skull of a native lad, aged 17, preserved as a dry preparation to show the ravages committed upon the osseous structures by a malignant growth (a round-celled sarcoma), which had developed in the right sphenomaxillary fossa, and filled the right nares, antrum, &c.

It will be seen that the body of the sphenoid, and the posterior half of the right ethmoidal cells are deeply and irregularly excavated, and present a rough, cribriform appearance. The os planum of the ethmoid on the right side, and the orbital plate of the superior maxillary on the same side, have been respectively displaced outwards and upwards. The tumour possessed processes, which took different directions. One of them entered the interior of the skull through the sphenomaxillary fissure, and subsequently through the anterior lacerated foramen, hooking round a plate of bone which appears to be the right lateral surface of the sphenoid. This prolongation made its appearance in the middle fossa of the cranium, converting the anterior lacerated and foramen rotundum into one large irregular-outlined aperture, as seen in the preparation. A second process perforated the inner plate of the right pterygoid process of the sphenoid at its root. Both the lesser wings of the sphenoid were also involved by the growth.

On viewing the base of the skull from above, several irregular-outlined openings or perforations are seen situated in the body of the sphenoid, in both lesser wings, and in the right great wing.

29. Exfoliation of the right half of the lower jaw, the result of necrosis. The exfoliation consists of a delicate, thin, hollow shell of bone, comprising the right ascending and transverse rami, with the condyloid and coronoid processes. No history.

30. "Skull and bones of the face, showing complete destruction of the bones of the hard palate" (superior maxillary, both palate bones, and the vomer) "from syphilitic disease." (Ewart.) (*Presented by* Moulvi Tamez Khan Bahadur.)

31. "Necrosis of the alveolar processes *en masse* of the upper and lower jaw." (Ewart.)

32. Necrosis of the left half of the lower jaw. No history.

33. Necrosis of the upper two-thirds of the body or horizontal portion of the lower jaw.

"The whole of the jaw was removed, and the patient did well after the operation. The disease was of eight months' duration, not the result of mercury or syphilis. In a native of Parway, aged 30." (*Presented by* Professor Allan Webb.)

34. Exfoliated portions of a necrosed lower jaw, with five teeth *in situ*. No history.

35. The right half of the lower jaw of a child in a state of complete necrosis. Removed by operation.

36. "Sequestrum from the lower jaw of a Hindu boy, aged eight years, with one of the deciduous molars *in situ*, and the cavity of reserve for the corresponding bicuspid laid open by the disease.

Neerosis caused by malarious cachexia of five years' standing." (Colles.)

37. "Necrosed portion of the lower jaw, removed from a native male named Nundo Lal Pal." No history. It consists of the right half of the jaw, from just below the coronoid and condyloid processes to the symphysis. The external surface is rough and bare, the internal deeply furrowed and eroded, the whole bone white and dry. The teeth have all dropped out of their sockets.
38. Necrosis of the lower jaw from "cancrum oris," following an attack of remittent fever. The preparation consists of the right half of the transverse portion of the jaw, from the angle to the symphysis. From a native male, aged 25.
39. Necrosis of the greater portion of the left half of the lower jaw, including the body and a portion of the ascending ramus. From a native.
40. Exfoliation of the external lamina of the osseous tissue of the lower jaw (right half), from a native boy, aged about 14, suffering from cancrum oris and hypertrophy of the spleen, &c.
41. The articular condyle, and a portion of the descending ramus of the right half of the lower jaw, removed on account of necrosis, from a native male patient, aged 30. The disease had set in after an attack of "fever," lasting intermittently for eight months.

The bone is quite dry, brownish-white, and destitute of periosteum. (*Presented by* Professor S. B. Partridge, F.R.C.S., &c.)

42. Extensive necrosis of the whole of the lower jaw, associated with chronic malarial cachexia. From a native male, aged 30, who died in hospital of pneumonia, &c.
 43. Necrosis of almost the whole of the lower jaw of a native (male), aged about 30. The left half of the jaw has principally suffered; several small exfoliations, of irregular size and shape, have separated from the outer surface of both the horizontal and ascending rami, and, on the inner aspect of the latter, there are numerous furrows and pits, with general roughening and thinning of the bone; while here and there, on both inner and outer surfaces of the jaw, there are traces of attempts at new bone being thrown out in the form of slightly prominent rough "bosses" or projecting processes. The sockets of all the molar teeth on the left side are exposed, and the alveolar margin considerably absorbed. The patient died from erysipelas.
 44. "The osseous skeleton of an osteo-sarcoma of the lower jaw." (Ewart.)
 45. "Anterior part of the antrum Highmorianum, removed for disease of the jaw." (Ewart.)
- The portion of the antrum referred to has evidently undergone expansion, the osseous wall becoming thin and shell-like. It is lined by a soft velvety membrane, and probably constitutes a portion of a cyst which had developed in this cavity.

46. "A cyst of considerable size, occupying a portion of the body of the left half of the lower jaw. Where that joins the ramus, the entire thickness of the bone is destroyed." (Ewart.)

What the contents of the cyst were, is not recorded. It is empty now, is about the size of a duck's egg, and situated just below the alveolar border, in the substance of the body and ascending ramus of the bone, expanding the latter both anteriorly and posteriorly. The fangs of the molar teeth reach into the cyst, but these teeth are firm, normal in number, and healthy-looking.

47. A cystic tumour of the lower jaw, from an up-country native, a Hindu, aged 32. The preparation consists of the left half of the lower jaw removed by disarticulation, and section at the symphysis. The posterior two-thirds have been converted into a thin-walled cyst, the size of a large orange, composed of firm connective tissue (periosteum), with plates of calcified material imbedded in it. The anterior third of the alveolar margin below the bicuspid teeth is expanded so as to form an irregular-outlined cyst with bony walls, filled with brownish, sabulous material, which, under the microscope, consists principally of flattened plates of cholesterine and altered blood, with free granular and molecular fat.

Although the three molar teeth are fully developed, and the fangs of the other teeth in the alveolus appear to be sound, yet the general characters of this cystic tumour seem closely allied to the so-called congenital or dentigerous cysts so frequently found in connection with the jaws, and probably the preceding preparation (No. 46) is a similar specimen. (*Presented by Professor Kenneth McLeod, M.D.*)

48. "Exostosis of the lower jaw of a native, aged 27 years. The disease was of ten years' standing. The whole of the growth with a portion of the jaw was successfully removed." (Ewart.)

The exostosis is trilobulated, and projects from the alveolar border of the left half of the horizontal portion of the lower jaw. Two incisor, one canine, and two bicuspid teeth, are seen to be involved in the growth. The section made shows the structure of the latter to consist almost entirely of hard, condensed, ivory-like, osseous tissue.

49. The bony shell of an osteo-sarcoma of the lower jaw. The preparation consists of "the left half of the lower jaw of a Chamar (native), aged 24, excised for a tumour involving the bone, from the condyle nearly to the symphysis. The tumour itself broke down altogether after a few days' maceration, leaving only the bony shell in which it was enclosed." (Colles.)

(See further, *Indian Medical Gazette*, November 1866, p. 339. *Presented by Dr. W. P. Dickson, Civil Surgeon, Rohtuk.*)

50. A large fibro-cystic tumour of the lower jaw. It consists of a series of cysts, varying in size from that of a small orange to that of a pigeon's egg, their walls composed of very dense and tough laminated fibrous tissue, with a smooth glistening epithelial lining on the inner surface. Each cyst is complete

in itself (unilocular). The contents consist of a soft, reddish-white, opaque, glairy fluid, which, under the microscope, exhibits large quantities of fat, molecular and granular, very large and numerous superimposed plates of cholesterine, altered blood-cells and pigment, and a few withered, old epithelial scales.

The horizontal ramus of the jaw is hollowed out so as to form the thin eggshell-like investment of two of the larger and two of the smaller cysts just described.—From a native male aged about 32. The growth is said to have been of nearly 20 years' duration. (*Presented by* Professor S. B. Partridge, F.R.C.S., &c.)

51. Another similar tumour from a native male, aged 35, stated to be a growth of two and a half years. It occupies the right half of the lower jaw, the horizontal portion of which is hollowed out to eggshell-like thinness. The growth is fibrocystic. Three of the larger cysts are bounded by osseous walls (the expanded jaw); the others have firm, tough, fibroid walls, lined on the interior by a layer of flattened epithelium. The cysts are all unilocular, and do not communicate with each other. They vary in size from a walnut to a betelnut. They contain soft, reddish-white, grumous, and glistening material, which, under the microscope, is seen to consist of much fat, molecular and granular; large and numerous superimposed plates of cholesterine; blood-cells in abundance, both red and white; and a little altered (fatty and withered) epithelium.

The portion of the jaw involved, together with the whole of the tumour was removed by operation.

52. A fibrous-looking tumour, with a portion of the lower jaw (left side), removed from a native male, aged 30. It is said to be a growth of two and a half years.

The portion of the jaw removed consists of the symphysis and left horizontal ramus as far as the angle. A smooth-surfaced, highly-lobulated growth is seen to spring from the alveolar border. It surrounds the whole of this border, from the angle of the jaw to the canine teeth, but beyond this the alveolus is free. The tumour also pressed backwards and upwards into the mouth. It here displaced the tongue, and constituted a formidable-looking growth in the floor of the buccal cavity, but the tongue itself, and the greater portion of the mucous membrane of the mouth, were not involved.

The tumour, when fresh, had a pinkish-white colour, but is now more opaque and brownish from soakage in spirit. It has a firm yet elastic consistency; no distinct capsule. On section is fibrous-looking, that portion growing from the gum being more densely fibrous than that projecting into the mouth.

At the angle of the jaw, half imbedded in the tumour, are the first molar and second bicuspid teeth; more anteriorly, where the alveolar border is free, the left canine and incisors are seen, and also the incisors, canine, and first bicuspid of the right side; altogether nine teeth, very much crowded together.

The bony portion of the lower maxilla (below the alveolus) does not appear to be affected, the growth remaining confined to the gum, and extending thence to the periosteum on the inner and outer aspects of the jaw.

On microscopic examination, its structure is seen to consist of fibro-cellular tissue, the cell-elements predominating. These are small, round, and nucleated. The fibrous tissue is scanty and delicate, irregularly and sparingly distributed; but the most remarkable character of the growth is the excessive development and amplification of the normally existing *glandular* structures of the gum. In every section, tubular and racemose developments are found, lined by cylindrical epithelium, or dilated and filled with exuberant shred, fatty epithelium. Blood-vessels are moderately numerous.

The tumour is therefore an "epulis" of rare variety; it may be termed an "adeno-sarcoma." (*Presented by* Professor Gayer.)

53. "A collection of permanent teeth showing the effects of caries in destroying the crown and dentine." (Ewart.)

54. A preparation exhibiting various degrees of caries affecting the permanent teeth of both the upper and lower jaws. (*Presented by* Professor W. T. Woods.)

55. "A sequestrum, consisting of the greater part of the alveolar process, with several teeth, from the lower jaw of a patient affected with profuse mercurial salivation." (Colles.)

56. A preparation showing inflammation of the fang of the right canine tooth, with the formation of an alveolar abscess, which has extended into the antrum, and produced considerable dilatation or expansion of that cavity. A soft, velvety, pyogenic membrane is still to be seen lining the inner surface of the abscess cavity.

56a. "Alveolar abscess." The small sac of the abscess is seen attached to the apex of the fang of a lower molar tooth. (*Presented by* Professor W. T. Woods.)

56b. "Hyperostosis" of a lower molar tooth. The fangs are seen encased in false bone, on account of an exuberant growth of the cementum." (*Presented by* Professor W. T. Woods.)

57. "A lower incisor tooth, surrounded by an enormous accumulation of tartar. The tooth was quite loose. From a male Hindu, aged 60." (Colles.)

58. Sternum from a case of rickets. The bone is bent backwards upon itself, so as to present an acute angle anteriorly.

59. Congenital union (syntosis) of two ribs,—the second and third of the right side. The sternal extremities are separated and distinct; half an inch from these a broad band of osseous tissue, three-fourths of an inch in length, unites the two ribs. They are again separated by a gap of about two inches, and then the lower rib is merged into the upper. Only a single tuberosity and head exist, and the latter, with a solitary whole facet for articulation with the vertebral column.

Found among the dissecting-room collection of bones. No history obtainable.

60. A couple of ribs, between which, on the inner side, is a conical or nipple-shaped growth, which unites their adjacent margins. The growth consists of imperfectly ossified cartilage, and is invested by the periosteum common to both ribs at this point. (*Presented by* Professor C. O. Woodford, M.D., &c.)
61. Necrosis of the fourth and fifth ribs and their costal cartilages, on the left side, close to the sternum. An opening in the superjacent skin, leading down to the diseased tissues, is shown in the preparation, and also the great thickening and condensation of the combined pleura and pericardium in this situation. All communication with the pleural and pericardial cavities was thereby prevented. Small portions of necrosed bone and cartilage were removed by operation during life. The patient, a native male, aged 40, died, however, of lobar pneumonia of the left lung. This organ was found firmly fixed to the parieties of the chest, and solid.
62. Sternum, with the sternal ends of the ribs, from a case of diffuse melanosis,—an East Indian male, aged 44.
- The sternum has three irregularly nodulated growths; two of them, about the size of a walnut, occupy the whole thickness of the bone beneath the periosteum, having caused absorption of the osseous tissue; the third, about half the size of the above, does not perforate the bone.
- The structure of these growths is that of melanotic carcinoma (enkephaloid), and similar developments were found in the liver, kidneys, brain, &c.
63. “Superficial caries of the acromial and sternal ends, and of a portion of the inferior surface of the right clavicle.” (Ewart.)
64. Extensive caries of the right scapula, affecting chiefly the glenoid cavity, which is very rough and eroded, but extending also to the axillary border of the bone, and involving both the acromial and coracoid processes. No history. The scapula was received “from the dissecting-room.”
65. Hypertrophy of the lower half of the right humerus. The thickening of the shaft, especially in its transverse diameter, is well seen, and is the result of syphilitic osteitis.
66. Hypertrophy of the shaft of the right humerus. The density and weight of the whole bone have considerably increased. The hypertrophy affects chiefly the upper half of the shaft, which is here especially massive and thick. No increase in the length of the bone has taken place.
67. A specimen showing thickening and roughening of the shaft of the left humerus at its lower third, with nodular enlargement of the bone in this situation, due to ossific deposit, the result of osteitis and periostitis, and probably syphilitic.
68. The lower articular end of the left humerus, with about an inch of the adjacent portion of the shaft, resected on the tenth day after an amputation through the elbow-joint, on account of a myeloid tumour of the forearm. The amputation-flaps having sloughed, this portion of the humerus was left exposed and bare, and had to be excised. The articular cartilage has been

almost completely absorbed, and the bone above it is destitute of periosteum ; was highly inflamed, and presented a very vascular condition in the fresh state.

69. "Longitudinal section of the upper third of the humerus of a native, aged 32, showing disintegration of the cancellated texture from osteo-myelitis." (Ewart.) In the recent state, the whole of this structure was found infiltrated with pus. "From a patient whose arm was removed at the shoulder-joint, and who died from pyæmia." (*Presented by Professor Fayrer.*)

70. The upper half of the humerus, showing the effects of osteo-myelitis. From a native male patient, who died from pyæmia after amputation through the middle of the arm. The lungs contained "numerous abscesses, varying in size from a pea to a pin's head." (Colles.)

71. Preparation showing (1) excision of the elbow-joint for extensive caries and necrosis of the articular ends of the humerus, ulna, and radius, which are seen to be rough and eroded, very light and spongy in texture, and almost destitute of the investing cartilage. (2) The head and shaft of the humerus, removed after death, exhibiting the results of extensive osteo-myelitis, which followed the operation on the elbow-joint. This was associated also with a large abscess beneath the pectoralis major muscle. The destructive changes in the shaft of the bone have resulted in separation of the superior epiphysis from it, while the medullary canal is occupied by soft, suppurating, highly vascular (in fresh state) material.

The patient, a native child, aged 12, died from pyæmia one month after the operation. (*Presented by Professor Fayrer.*)

72. Osteo-myelitis of the left humerus. From a native woman, aged 25, whose forearm had been amputated (at the elbow-joint) for a myeloid sarcoma, involving the upper portions of the radius and ulna. The flaps sloughed, and the lower end of the humerus became bare and exposed for about two inches. This was resected, but followed by constitutional symptoms (fever, great prostration, &c.), and a secondary amputation necessitated at the shoulder-joint. Osteo-myelitis of the entire shaft of the humerus was diagnosed during life, and is demonstrated in the preparation.

A longitudinal section through the bone shows (1) the remains of a protruding fungous mass of the medulla at the lower end of the canal ; (2) the rest of this space occupied by soft, purulent, and (in the fresh state) highly vascular medullary substance ; (3) the cancellous head of the bone rarefied, and filled with similar pulpy, purulent material ; (4) the endosteum and periosteum removed for a considerable distance upwards from the section of the lower end of the shaft, leaving rough and bare bone. The patient died on the seventh day after the last operation.

Multiple abscesses (pyæmic) were found in the lungs and liver. The spleen was enlarged and congested. Both pleuræ were inflamed,

and contained between them about eight ounces of sero-purulent fluid. (*Presented by* Professor H. C. Cutcliffe.)

73. Osteo-myelitis of the left humerus, following the operation of excision of the elbow-joint for disease. Death took place notwithstanding the limb was amputated at the shoulder-joint.— From a West Indian (Negro), aged 30.

The preparation exhibits the head and about two inches of the shaft of the humerus bisected longitudinally. The periosteum is highly vascular and thickened, peels off readily from the bone, which is seen to be quite bare and rough (necrosed). The cancellous tissue is much softened, and freely infiltrated with disintegrating, purulent medullary material.

74. The right humerus, with portions of the radius and ulna, from a case of resection of the elbow-joint for disease, in a native male, aged 40, who died from acute septie peritonitis after the operation.

The humerus has been divided vertically so as to expose the medullary canal. This is seen to be acutely inflamed, the medulla soft, flickering, of a bright cherry-red colour. The cancellous tissue of the head of the bone is similarly affected (osteomyelitis).

For an inch and a half above the resected end of the humerus the bone is bare and rough, denuded of both periosteum and endosteum. The latter, indeed, seems to have separated from the interior of the bone for about six inches. A plug of sloughy-looking, putrescent medulla was found, on *post-mortem* examination, protruding for half an inch from the medullary canal. The rest of this substance (medulla), examined microscopically, was found rich in blood-corpuscles, and, in addition, its proper structure (small, round, mono-nucleated cells and giant cells) freely infiltrated with fat and nuclei (bioplasts), and containing also many cells, which, on the addition of acetic acid, became granular and exhibited two or three small distinct nuclei, *i.e.* pus-corpuscles. These appearances indicate acute inflammatory changes just falling short of diffuse suppuration.

75. "Caries of the upper portion of the (left) humerus." (Ewart.) No history.

76. Caries of the head of the left humerus. A small portion of the outer layer of the bone is also necrosed, and the sequestrum was enclosed or invaginated by disintegrating osseous tissue.

77. Caries and necrosis of the head and upper third of the shaft of the right humerus, "with complete separation of the former from the shaft. Caries also of the lower extremity, and of the articular ends of the radius and ulna." (Ewart.) (*Presented by* Professor R. O'Shaughnessy.)

78. Extensive caries of the lower end of the right humerus, and of the adjacent articular surfaces and upper portions of the shafts of the ulna and radius. The bones of the carpus, metacarpus, and phalanges are also similarly affected. No history.

79. "Caries of the bones forming the left elbow-joint." (Ewart.) The head and neck of the radius are a good deal thickened by the deposit of new bone.

80. Necrosis of the lower extremity of the right humerus, resulting in destruction and removal of the articular surface and a portion of the external condyle. A good deal of new bone has been thrown out over the remains of the condyles, and the density and weight of the bone here have considerably increased.
81. A portion of necrosed bone, about two and a half inches in length, and comprising the whole thickness of the shaft, removed from the right humerus. (*Presented by* Professor Fayrer.)
82. An exfoliation from the shaft of the humerus, about an inch and a half in length, and consisting of the necrosed compact tissue or cortical layer of the bone. No history.
83. "Necrosis of a portion of the head and upper part of the shaft of the humerus." (Ewart.) (*Presented by* Professor Edward Goodeve.)
84. A sequestrum, about five inches in length, and comprising a considerable portion of the entire thickness of the shaft of the humerus, removed by operation from the arm of a native boy. (*Presented by* Professor Fayrer.)
85. A preparation exhibiting two spongy exostoses at the upper part of the right humerus. The larger one is placed externally, springing from the surgical neck of the bone, and has a well-defined constricted pedicle. The smaller one is flattened and tuberos, is situated about two inches below the head of the humerus, projecting from the inner margin of the shaft, and is grooved on its anterior surface.

The ulna is foreshortened, and terminates in a pointed extremity about an inch above the wrist-joint. Small osteophytic processes surround the bone here, and a larger growth, apparently of the same character, springs from the interosseous border, about two inches above the inferior ulnar extremity. The head of the radius is elongated, tuberculated, and articulates with the external condyle of the humerus, not by its summit, but by its inner margin.

The superior extremity of the ulna and the inferior extremity of the humerus are expanded and large. The latter bone is curved inwards, the shafts of the radius and ulna outwards--and also flattened from before backwards. These changes are probably due to rickets.

86. A foliaceous, exuberant outgrowth of new bone (hyperostosis) from the lower extremity of the humerus, the compact tissue of which is considerably thickened, and seen to be directly continuous with the new growth.
- 86a. The right humerus from a case of diffuse melanosis,—an East Indian male, aged 44, showing dark sooty deposits in the cancellous osseous tissue of the upper and lower extremities, as revealed by the longitudinal section which has been made through the bone. The shaft of the bone is not affected. The structure of the morbid deposits is that of encephoid carcinoma, and similar growths were found in the liver, kidneys, brain, ribs, and sternum (*see* prep. 62), &c. ("Medical *Post-mortem* Records," vol. I, 1873, p. 16.)

87. "Bones of the forearms twisted, shortened, and atrophied, with a certain degree of softening. The bones of the lower extremities were similarly affected. From a subject in the dissecting-room." (Ewart.) The radius and ulna of the right forearm are only a little more than half the size of the corresponding bones of the left forearm. In each case these bones are curved outwards, the curvature in the left radius and ulna being much more marked than in the right. The left ulna is also foreshortened, and ankylosed posteriorly to the trochlear cavity of the humerus. The superior extremities of both ulnæ, and the inferior extremities of the radii, are expanded and disproportionately large. The lower end of each humerus is also greatly expanded, flattened from before backwards; the internal condyle remarkably prolonged and thick. The head of the left radius is elongated, drawn out in the form of a rounded process with a tuberculated extremity, which lies behind the elbow joint, and is about an inch and a half in length. All these changes in the bones are due to rickets.
88. "Caries of the shaft of the ulna. The bone presents a worm-eaten appearance, and is somewhat thicker than natural." (Ewart.) The medullary canal has been almost obliterated.
89. Caries of the superior extremity and upper third of the shaft of the right ulna. No history.
90. Three sequestra—each from three to four inches in length—removed from the bones of the forearm of a young native lad, who, during convalescence from small-pox, was attacked with acute osteitis of the radius and ulna, ending in extensive necrosis of the shafts of these bones.
91. The upper half of the right radius and ulna, from a patient who died from pyæmia following amputation of the forearm. The bones are seen to be almost denuded of periosteum, and superficially necrotic. "There was no osteo-myelitis, but the venæ commites of the radial and ulnar arteries were filled with pus up to their junction with the axillary, where there was a slight recent non-adherent coagulum." (Ewart.)
92. Osteo-myelitis of the right radius and ulna, following upon an amputation at the lower third of the forearm for a gunshot injury to the palm of the hand. A longitudinal section has been made through both bones, showing suppurative inflammation of the medulla, extending into the cancellous tissue of the upper extremities of these bones. A secondary amputation was necessitated and performed at the lower third of the arm; the humerus was found healthy. (*Presented by* Professor Fayrer.)
93. "Osteo-sarcoma connected with the (right) ulna and wrist joint." (Ewart.) (*Presented by* Professor R. O'Shaughnessy.)
94. Inflammation of the middle phalanx, and proximal phalangeal articulation of the finger, resulting in thickening and superficial necrosis of the former, and denudation of cartilage from the articular surfaces of the latter. The distal phalangeal articulation is healthy.

95. Caries of the pisiform, unciform, and trapezoid bones of the left carpus; as also of the metacarpal and first phalangeal bones. No history.
96. "The left hand of a Punjabi boy, aged 12, with the metacarpal bones degenerated into fat. *History*: About three years ago the patient noticed that his hand began to itch and be painful, and it afterwards swelled a good deal. It thus commenced with inflammatory symptoms. Poultices were applied, but the swelling suppurated, and the opening never healed. Other apertures formed, becoming converted into sinuses: the discharge partly sanious, partly purulent. There were twelve of these sinuses. Was treated by various native quacks, but without advantage." Amputation of the hand just above the wrist was performed by Dr. F. F. Allen, 2nd Goorkha Regiment, at the charitable dispensary, Rawal Pindi. Not only the metacarpal bones, but those of the carpus, the phalanges, and the radius and ulna, are all highly infiltrated with fat, and cut most readily with the scalpel. There is thickening, with superficial caries and central necrosis (at the head) of the metacarpal bone of the index finger; caries also of several bones of the carpus, &c., so that probably this has been the primary disease, and the fatty degeneration only consecutive to inflammatory changes, and principally to prolonged disuse of the hand, which the history of the case indicates. (*Presented by* Dr. R. T. Lyons, Civil Surgeon, Rawal Pindi.)
97. Caries of all the bones of the right carpus, of the bases of the metacarpal bones, and of the articular ends of the radius and ulna, with complete disorganization of the wrist-joint. The specimen was taken from an aged Hindu, who was brought to the hospital in a very low condition. He died from exhaustion nine days after admission, and before any operation could have been safely performed.
98. Caries of the left carpus, apparently syphilitic. The carpal bones are all softened, rarefied, and very spongy in structure; their surfaces eroded and roughened. The disease has extended also to the radius and ulna. The articular surface of the former is much hollowed out, and from both anterior and posterior surfaces of the bone here stalactitic processes of newly-formed bone have been thrown out in an irregular manner. The ulna shows similar changes on its posterior aspect, and the shafts of both bones for their lower thirds exhibit much thickening, with, at the same time, caries and erosion of the compact outer layer.
There were numerous sinuses on the dorsum of the wrist-joint, leading down to the diseased bones. Amputation was performed at the middle third of the forearm.
The patient, a young native adult (male), had a hard chancre six years previously, followed by secondary skin eruptions; the last attack of the latter only six months prior to his admission into hospital.
99. Extensive caries of all the bones of the left carpus, of the lower extremities of the radius and ulna, of the bases of all five

metacarpal bones, and of the heads of the fourth and fifth, and, to a slight extent, of the third metacarpal bones. A little new bone has also been thrown out over the posterior grooved surface of the lower end of the radius.—From a native male, aged 35. Amputation performed at the lower third of the forearm. (*Presented by* Professor H. Gayer.)

100. The anterior half of the ungual phalanx of the middle finger necrosed and exfoliated in connection with a "whitlow." (*Presented by* Professor H. C. Cutcliffe, F.R.C.S., &c.)
101. "Macerated bones of the lower half of the right forearm and hand, with osseous spicula entering into the composition of a tumour, which involved the whole of the hand." (Ewart.)
102. Caries of the right acetabulum, with thickening of portions of the brim by the irregular deposit of new osseous tissues. No history.
103. "Left femur bent from rickets, the convexity pointing anteriorly." (Ewart.) The bulbous enlargement of the condyles below, and of the head of the bone and trochanter major above, is also very typically represented.
104. Rickets affecting the right femur. The ends of the bones are enlarged. The shaft foreshortened, curved anteriorly, flattened laterally.
105. Left femur bent from rickets. The bone has been divided longitudinally in order to exhibit the highly porous, wide-meshed, exaggerated, cancellous structure of the extremities, and the thickening of the compact tissue of the shaft.
106. The lower half of the left femur and upper two-thirds of the corresponding tibia and fibula.—From a European girl, E.D., aged 17. Amputation of the thigh was performed for scrofulous disorganization of the knee-joint. "The right leg was removed a year previously for the same disease." There had existed several "scrofulous ulcers" around the joint "since childhood." The knee-joint (left) was flexed at an acute angle, and almost ankylosed in this position. Through an unhealthy-looking ulcer, on its inner aspect, a portion of the internal condyle of the femur protruded as a dry blackened mass. The bones as now preserved (dry) exhibit (1) thickening and roughening of the shaft of the femur for three inches above the articular end; the latter expanded; the inner condyle necrosed superficially and throughout carious; the external condyle also superficially carious; the intercondyloid notch widened. The osseous tissue of the whole of the lower extremity of the bone is very soft and cancellous, in parts filled with an earthy, chalky (phosphatic) deposit. (2) The head of the tibia shows similar changes; the bone highly expanded, porous, brittle, and soft. (3) There is superficial caries of the anterior margin of the shaft for two inches below the head of the tibia. (4) Similar changes have extended to the head of the fibula. The rest of this bone is remarkably slender and attenuated. All these bones are very greasy,—largely infiltrated with fat.

107. Chronic inflammation (ostitis) of the right femur. A considerable deposit of new bone has taken place, not only over the surface of the bone, but also between its lamellæ, and especially concentrically, so as to obliterate completely the medullary canal. The bone throughout is very dense, firm, and heavy.
 108. Inflammation (chronic) of the shaft of the left femur, which is greatly thickened and rough externally, and, as a longitudinal section shows, the cancellous tissue has become so condensed and infiltrated, as it were, by new bone that it is almost indistinguishable from the compact portion of the shaft. The medullary canal, in the middle third of the bone, has been almost obliterated by these changes. The whole bone has increased in density and weight.
 109. A similar preparation (chronic ostitis) of the left femur. The bone is greatly increased in thickness and weight, the cancellous tissue of the shaft converted into compact firm bone, and the medullary canal completely obliterated.
 110. Inflammatory hypertrophy of the right femur. A large quantity of new bone has been thrown out all round the shaft of the bone, which is rendered thereby rough and scaly. A longitudinal section made through the bone also exhibits great sclerosis of the compact tissue, so that it measures from one-half to one-third of an inch in thickness. The medullary canal has been much encroached upon and narrowed. The whole bone seems to have increased in length as well as thickness (breadth).
 111. Chronic ostitis of the left femur, with nodular thickening of the bone, on its inner aspect, in two situations, viz. at the upper third of the shaft below the lesser trochanter, and at the lower third, just above the inner condyle. In these situations the compact tissue is seen to be greatly expanded, and, at the same time, exhibits interstitial absorption of the central lamella, with the formation of a pseudo-cancellated structure. A large quantity of new bone has been thrown out at the periphery of each nodular expansion, and to a less extent generally over the external surface of the whole shaft.
 112. Chronic inflammation of the whole of the shaft of the left femur. The external surface is greatly thickened from deposit of new bone. The compact tissue hypertrophied; the medullary canal almost obliterated. On the anterior and internal aspects of the bone, at the upper and lower thirds of the shaft, two circumscribed patches of caries of the cortical layer are also to be observed.
 113. Acute periostitis and ostitis of the left femur, following amputation at the lower third of the thigh, in the case of a Hindu boy aged 6, who had met with a compound fracture of the leg (*see* series I, prep. No. 161).
- About an inch and a half of the lower end of the shaft is seen separated from the rest. This was the part first removed (with bone forceps) when the bone had become bare, and the periosteum had receded from its surface in the amputation wound. The disease progressed, however, unchecked; and, as may be seen

in the preparation, the whole of the periosteum investing the shaft, as high up as the head of the bone, has spontaneously separated, or may be readily stripped off the subjacent bone, which is bare and dry, the periosteum itself being much swollen and softened in consistency. The medullary canal is occupied by soft, highly vascular, diffuent medulla (incipient osteomyelitis.)

The patient died from exhaustion and hyperpyrexia attending these changes. (*Presented by* Professor H. C. Cutcliffe, F.R.C.S., &c.)

114. Periostitis and ostitis of the whole of the right femur, with necrosis and exfoliation of portions of the shaft of the bone.

The whole bone is abnormally and irregularly thickened. At about the centre of its posterior surface is an irregular-outlined excavation, the result of necrosis, and a larger one on the posterior and inner aspect at the lower third of the shaft. From both these, dead bone was discharged by means of long sinuses in the soft parts superjacent, opening by several fistulous apertures on the posterior and inner aspects of the thigh. In attempting to gouge out (by operation) some of the necrosed bone from the lower of the two cavities just described, the femoral vessels (in Hunter's canal) were encountered, and the femoral artery was accidentally injured.

Secondary hæmorrhage after this accident was the immediate cause of death.

It will be noticed that the disease has extended into both the knee and hip-joints. In the former, the encrusting cartilage over the upper half of the condyles has been removed, and the bone is exposed and rough. The same conditions existed in the head of the tibia, and there was considerable soft ankylosis of the joint. The cartilage from the posterior and inner aspect of the head of the femur has been absorbed, leaving a red, raw, granular condition of the exposed bone. The acetabulum was similarly affected.

The preparation is taken from a native male, aged 22. According to his statement the disease had existed for about five years, and the necrosis of the bone was consequent upon a large abscess of the thigh, which formed after a severe attack of malarial fever. The abscess was opened, but never healed,—continued to discharge pus, and after a time, bits of dead bone. In this condition he was admitted into hospital. (“*Surgical Post-mortem Records*,” vol. I, 1875, pp. 123-24). (*Presented by* Professor K. McLeod, M.D.)

115. Extensive periostitis of the right femur. A longitudinal section through the upper two-thirds of the bone showed also a softened and incipiently suppurative condition of the medulla. The periosteum is throughout inflamed and thickened; in parts completely detached from the subjacent osseous surface.

From a native male, aged 28, admitted with symptoms of acute periostitis, following upon a large abscess in the calf of the leg. The thigh was amputated after other remedial measures had failed, but the patient died quite exhausted by the profuse discharge from the wound, and with symptoms of septic poisoning.

116. The upper third of the right femur, showing general thickening and condensation (sclerosis) of the bone, and roughening of the trochanters and posterior surface of the shaft—especially along the linea aspera—from the formation of new bone. All these changes are the result of osteitis and periostitis, consequent upon large burrowing abscesses in the upper part of the thigh. From a native male (Gopal), who died in hospital while under treatment. (“Surgical *Post-mortem* Records,” vol. I, 1879, pp. 569-70.) (Presented by Professor S. B. Partridge, F.R.C.S., &c.)

117. Left femur, exhibiting the formation of new bone in the shape of rough projections and processes along the linea aspera, and thickening of the upper and middle portions of the surface of the shaft from the same cause.

These changes are the result of periostitis and osteitis, associated with large burrowing abscesses in the thigh, following upon small-pox.

The patient, a native male, aged 55, had suffered from a severe attack of small-pox about three months prior to admission into hospital. He was in a very weak and debilitated condition. The abscesses were opened and drained, but the man died from exhaustion and gangrene of the left lung. (See further, “Surgical *Post-mortem* Records,” vol. I, 1879, pp. 579-80.)

118. The upper half of the left femur, from an amputation at the middle of the thigh, showing (1) denudation of the bone from loss of periosteum for about two inches above the level of the stump; and (2) a putrid condition of the medulla (osteomyelitis). On a longitudinal section being made through the bone, the medullary canal was found filled with a dirty, yellowish-pink, abnormally fluid medulla, the remains of which can still be seen in the preparation. Examined microscopically, this was composed of (a) a very large number of red blood-cells and pigmented corpuscles, of spindle and angular shape; (b) an abundance of granular, nucleated pus-cells; (c) a great deal of free fat in molecules and globules—either simply opaque, or variously tinged yellow or pink; (d) round, granulation-like cells, with single large nuclei, or some similarly nucleated but spindle-shaped cells, &c., &c.

Similar material fills the cancellous structure of the trochanters and head of the bone: the latter is abnormally soft.

The patient, a native male, aged 30, was admitted into hospital with an improperly-treated compound fracture of the lower third of the femur, which had existed for a month and a half, and was now associated with burrowing sinuses in the soft parts around, leading down to the injured bone.

There was suppurative thrombosis of the left femoral vein, multiple abscesses in the lungs, and other evidences of pyæmia, which was the

cause of death after operation. ("Surgical *Post-mortem* Records," vol. I, 1880, pp. 663-64.)

119. Osteo-myelitis of the left femur, secondary to amputation at the lower third of the shaft for acute traumatic synovitis, with suppurative disorganisation of the knee-joint. A second amputation of the hip-joint had to be performed. The patient, a Mahomedan adult, "Haji Ismail, died ninety hours after the after latter operation, with symptoms of pyæmia." (Colles.)

A longitudinal section through the upper two-thirds of the bone shows "extensive purulent deposit throughout the medulla and cancellous structure of the shaft, reaching even into the trochanters and head of the bone."

On *post-mortem* examination, both pleuræ were found inflamed, and multiple abscesses in the lungs. (*Presented by* Professor Fayrer.)

120. Osteo-myelitis of the left femur, after amputation, at its lower third, for serofulous disease of the left knee-joint, in a European girl. (E. D.), aged 17. (*See prep.* 106.)

121. Upper part of the right femur showing osteo-myelitis and partial destruction of the cancellous tissue of the bone after amputation, at about the middle of the thigh, on account of complete disorganisation of the knee-joint, and burrowing abscesses in its neighbourhood. From a native boy aged 11.

The periosteum at the lower portion of the bone is completely removed, leaving its surface bare. This portion of bone, about two inches in length, was exposed in the stump and removed by bone-forceps.

The medulla of the whole shaft was found very much softened, and the innermost layers of the cancellous structure of the bone infiltrated with purulent fluid: the disease, in fact, has only stopped short (as may be seen in the preparation) at the cartilaginous lines separating the epiphyses of the head and trochanter major from the rest of the shaft.

Death took place on the seventh day after amputation. (*Presented by* Professor H. C. Cutcliffe, F.R.C.S., &c.)

122. Osteo-myelitis of the left femur. This condition was associated with suppurative synovitis (pyæmic) of the left knee-joint in a native woman, aged about 50. The patient received a severe contusion of the right forearm, which was followed by local suppuration. Burrowing abscesses formed, and the ulna became partially denuded of periosteum. Fever with rigors supervened, the left knee-joint swelled and suppurated, and ultimately dysentery of severe type complicated the case and hastened the fatal issue. (*See further*, "Medial *Post-mortem* Records," vol. I, 1873, pp. 209-10.)

123. A longitudinal section through the upper half of the left femur showing extensive osteo-myelitis. The medullary canal and cancellous tissue of the bone, including that of the great trochanter, are involved in the inflammatory process. They present (in fresh state) a highly vascular pus-infiltrated condition.

From a case of acute suppurative synovitis of the left knee-joint in a native female, aged 20. The thigh was amputated, at the lower

third, on account of the diseased joint, but this condition of the femur setting in after the operation, a secondary amputation at the hip-joint was necessitated and performed. The patient, however, died from pyæmia. (*Presented by Dr. Edward Lawrie.*)

124. The lower half of the shaft of the right femur exhibiting superficial caries of the surface, with great expansion (osteoporosis) of the cancellous structure in the interior. The compact tissue is reduced to a mere shell.
125. "Caries of the lower extremity of the left femur, with (nodular) hypertrophy of the cortical part of the middle third of the shaft." (Ewart.)
126. "Caries, with enlargement of the lower third of the right femur." (Ewart.) Both condyles of the bone are also involved in the disease.
127. Extensive caries with necrosis of the condyles of the femur, head and upper third of the shaft of the tibia, and upper third of the fibula. There is also a large growth of new bone over the inner and posterior aspects of the shaft and head of the tibia. The knee-joint appears to have been perforated and secondarily involved. No history.
128. Extensive caries of the inferior third and condyles of the left femur, and of the head of the tibia. A large portion of the external condyle of the femur and the outer half of the head of the tibia have been completely destroyed and removed.
129. Superficial caries of the external condyle of the right femur on its outer aspect, involving a space about the size of a rupee. No history.
130. The upper third of the left femur, exhibiting a roughened and superficially carious condition of the great trochanter. There were large burrowing abscesses and sinuses around the hip-joint, which itself was not implicated.
From a native male, aged 38, who died in hospital. (*See further, "Surgical Post-mortem Records," vol. I, 1879, pp. 597-98.*)
131. Central necrosis of the upper two-thirds of the shaft of the left femur. The dead bone is seen to be surrounded by an exuberant growth of new osseous tissue, but large cloacæ are left on the inner and outer aspects, through which the condition of the sequestrum can readily be recognized. The head and trochanters remain unaffected. There is no history of the case, but the bone evidently belonged to a young subject, as the epiphyses for the head and trochanter major have not yet completely united with the shaft.
132. Necrosed fragments removed "from an old case of fracture of the femur."
133. A large sequestrum of the femur, removed after amputation of the thigh "for popliteal aneurism." From a native male patient, named Abbas. The portion of dead bone is about four inches in length, and involves the whole thickness of the shaft of the bone.
134. A very interesting preparation, showing (1) the lower third of the left femur, the condyles of which are bare, rough, destitute of

periosteum, and almost completely necrosed. This portion of the bone protruded from the soft parts, after a "natural amputation" had taken place at the knee-joint, *i.e.* after gangrene and spontaneous separation of the entire leg. (2) Above the condyles, the shaft, for about three inches, is seen covered by thickened and granulating soft parts (muscles, fibrous tissue, &c.). This had a healthy appearance, and the line of demarcation between it and the dead condyles was most distinct, and can be well seen also in the preparation. (3) Above this part is suspended a sequestrum of the whole thickness of the shaft of the bone, involving about its middle third. This sequestrum was enclosed within a shell of newly-formed bone, and was removed when amputation was performed a little below the middle third of the thigh.

The patient, a native male, aged 32, stated, on admission into hospital, that about five months ago he, while in a state of intoxication, fell off the roof of a two-storied house and sustained a compound fracture of the left ankle. The fracture was treated by a native doctor, but the wound sloughed, the sloughing extended to the whole foot, and it (the foot) at last separated from the leg by natural processes (amputation). The morbid action, however, did not stop short of this, for, according to him, the leg then became gangrenous, the soft parts gradually disorganising and separating, and at last the entire leg dropped off at the knee-joint. There has been since then a tendency to a yet further extension of the sloughing process up the thigh. The condyles of the femur had become uncovered and necrosed, but a healthy line of demarcation now (on admission) seems to exist a little above them; and in this state, with the bare and rough and blackened condyles protruding from a granulating fleshy stump, he sought relief at the hospital.

After amputation (*secundum artem*), as above mentioned, the man made a good recovery.

135. Complete necrosis of the shaft of the left femur. From a native boy, aged 9 years, who died in hospital. From the lower epiphysis to the great trochanter the bone is bare, of a dead-white colour, and surrounded by a soft shell of porous, spongy, imperfectly-formed osseous tissue, which is only incomplete on the outer aspect. The lower epiphysial and diaphysial surfaces are rough and partially necrosed. The disease appears to have commenced here, and affected the shaft secondarily. The inferior surface of the patella and the inter-condyloid notch of the femur are rough and superficially carious, and this is also the condition of the outer articulating surface on the head of the tibia.

136. Resection of a portion of the shaft of the femur in a thigh amputation (for gunshot-injury), on the forty-fifth day, owing to necrosis of the stump, &c. From a native male, aged 23. The resected portion is a piece of the femur, about one inch in length, with an exuberant rampart of partially hard, partially soft, tissue around it. The bone is dry and bare—quite necrotic.

The basal portion of the growth around it is hard and bony, *i.e.* new bone thrown out over the necrosed stump; the superficial portion is softer and, fibrous-looking, and, under the microscope, is seen to consist of firm, connective (fibrous) tissue, is a state of active proliferation,—numerous round and spindle-shaped cells and small blood-vessels permeating the structure in every direction. It is evidently the periosteum itself undergoing inflammatory changes.

137. Bilateral exostosis of the femur. Each growth is about the size of a walnut, very irregular in outline, somewhat contracted at its base of attachment to the shaft, and the surface rough and tuberculated.

138. The upper half of the shaft of the left femur showing a bony growth (osteophyte), situated a little below and behind the lesser trochanter, on the posterior aspect of the shaft. The head of the bone is also rough and carious, and the hip-joint was found disorganised. The osseous growth is dendritic in configuration, is seen to spring from the upper two inches of the linea aspera, and is composed, evidently, of newly-formed osseous tissue. It is deeply grooved on the inner side, and throughout perforated by larger and smaller openings or fenestræ. There is a little new bone also thrown out along the anterior inter-trochanteric line. (*See further, "Surgical Post-mortem Records,"* vol. I, 1879, pp. 555-56.)

139. A bony tumour removed from the inner side of the left femur. From a native male (Nobin), aged 25. The growth is stated to have been of fifteen years' duration, and to have originated from an injury,—a blow with a hammer,—on the inner side of the thigh. This is an osseous outgrowth, not a true tumour. It has a broad base where chiselled off from the femur; beyond this becomes somewhat contracted, but expands again a little, and has a square-shaped, truncated extremity, which is deeply fissured, and so forms seven or eight irregular-sized flattened tubers. These are all tipped with cartilage, and invested by a perichondrium continuous with the periosteum of the remainder of the growth. The bulk of the latter consists of cancellous osseous tissue, with only, here and there, small portions firmer and more compact-looking.

140. An enormous encephaloid tumour of the lower end of the right femur.—From a native female, aged 40.

The knee-joint is also involved, and measured at the widest part 21 inches.

The lower extremity of the femur is seen to be almost completely disorganised; the condyles enormously expanded. The shaft of the bone is necrosed, destitute of periosteum at its lower end, and the medulla soft, fatty, and vascular throughout. The head of the tibia and the upper portion of its shaft (*vide* preparation) are very soft and highly fatty. The inter-articular cartilage has become transformed into a glistening, soft, gelatinoid mass, coloured pink and red. All the ligaments and soft structures entering into the composition of the knee-joint have undergone

disintegration, their remains being indicated by soft, shreddy and pulpy fragments, hanging loosely within and about the joint.

Scrapings and sections from different parts of the growth exhibit (under the microscope) a large number of polymorphous cells, the majority largely charged with fat granules and molecules, and some with (apparently) colloid material. The more perfect cells have large single or double nuclei, &c. The stroma is scanty, but fibrillated. The appearances indicate beyond reasonable doubt that the growth is encephaloid carcinoma,—a magnificent example of primary cancer of bone. The disease seems to have commenced in the cancellous or medullary tissue of the lower end of the femur. The condyles have subsequently expanded, then the knee-joint became implicated, the ligaments, inter-articular cartilage, synovial membrane, and patella, &c., all being gradually involved in the widespread infiltration of the growth.

The patient stated that the tumour was of a little more than two years' growth, commencing as a small swelling below the right patella, and attended with pain, at first only on movement. It has gradually attained its present formidable size (that of a water-melon), increasing very rapidly during the last three and a half months. It occupies the whole circumference of the right thigh, being, however, more prominent anteriorly than posteriorly; is soft to the feel, painful on pressure; the skin over it œdematous, and covered by a network of large superficial veins. A chain of indurated lymphatic glands could be felt along the course of the femoral vessels up to the groin, and even beyond, into the abdomen. During her stay in hospital the patient accidentally fell off her bed and sustained a simple fracture of the femur at about the middle third, or just above the tumour. This injury was succeeded in a few days by paralysis, first of the lower, and then of the upper extremities. She remained in a semi-conscious state for two days, then gradually became low and comatose, and thus died. (*See further, "Surgical Post-mortem Records,"* vol. I, 1873, p. 22.)

141. Extreme atrophy of the right fibula. "The whole of the earthy matter of the shaft has disappeared, and at the extremities of the bone some has been absorbed and replaced by fat. The shaft is now represented by a mere string of fibrous tissue." (Ewart.) No history.
142. "Right tibia, bent from rickets." The bone presents a prominent anterior curvature at its lower third, is flattened from side to side in the upper two-thirds, and shows bulbous expansions of the superior and inferior extremities.
143. "Tibia, bent and thickened from rickets. There is a good deal of chalky infiltration of the cancellous structure and medullary lamina of the shaft." (Ewart.)
144. Rachitic enlargement of the superior and inferior extremities of the bones of both legs. This is especially well marked in the tibiæ. There is also considerable obliquity of the articulating

surfaces at the knee-joint; the head of each tibia is twisted so as to form an obtuse angle with the shaft, and the articular surface for the inner condyle of the femur lies on a plane at least two inches below that for the external condyle. The knee-joints were thus displaced outwards (*genu varum*), and the legs bent inwards towards the ankles. There is a kind of compensatory obliquity of the expanded lower extremities of the tibiæ, they being directed downwards and outwards, while the superior extremities look upwards and inwards.

The superior and inferior extremities of the fibulæ show similar, but less marked, changes: the condyles of the femur do not appear to be materially altered either in structure or position.

The subject was a native male (Hindu), aged about 24, who died in hospital from dysentery, with multiple abscesses of the liver, &c. ("Medical *Post-mortem* Records," vol. III, 1880, pp. 587-88.)

145. A longitudinal section of the right tibia showing nodular thickening of the compact tissue of the shaft, at the upper and middle thirds of the bone, the result of syphilitic osteitis.
146. Diffuse inflammation (ostitis and periostitis) of the shafts and lower extremities of the left tibia and fibula, resulting in considerable thickening and roughening of their external surfaces, from an exuberant deposit of new osseous tissue, and the union or ankylosis of both bones at their lower thirds.
147. Inflammation (ostitis, &c.) of the lower half of the right tibia and fibula, with great thickening of the surfaces of these bones by a deposit of new osseous tissue. The inferior tibio-fibular articulation is thus ankylosed, and many bridges or spicules of new bone exist between the opposed margins of the lower three inches of these two bones. Portions of both malleoli are necrosed; the ankle-joint perforated; the articular osseous surfaces extensively carious.
148. Chronic inflammation of the whole of the shaft of the right tibia, resulting in great thickening of the surface and compact tissue by formation of new bone. As seen in the section made through the tibia, the compact tissue appears to have undergone expansion, and then consolidation, especially towards the central portion of the shaft. At the same time, the cancellous tissue has also become more condensed, and the medullary canal completely obliterated. There is, further, superficial caries of the new bone at the surface of the shaft and towards the articular extremities. The knee-joint appears to have been implicated.
149. Extensive syphilitic osteitis and periostitis of the shafts of both tibiæ. From a European patient (male), aged 36, who died in hospital. On the anterior aspect (shin) of the right tibia, about midway between the upper and lower extremities, is a circular, crater-like opening, the size of a four-anna piece. It leads into a small cavity, at the bottom and sides of which the bone is necrosed. Apart from this excavation, the whole of the shaft of the tibia is seen to be abnormally thickened, and presents a broadly nodular condition along the whole of the anterior surface. The periosteum can be stripped away

easily, and dead and rough bone is found beneath it. Somewhat similar nodular thickening of the shaft of the left fibula is also clearly manifested. At the junction of the lower with the middle third of the right tibia, an ununited transverse fracture of the shaft is found, the fragments being held together by greatly thickened periosteum; and, at the middle of the left tibia, there is a similar oblique fracture, directed from in front backwards and outwards through the whole thickness of the shaft. The ends of the bones here are also only connected by fibrous tissue; there is no bony union. These fractures had occurred subsequent to the existence of chronic inflammatory changes in the bones; that of the right leg from a fall from a horse about a year prior to admission into hospital; that of the left tibia from an accidental "twisting" of the leg six months later on.

The absence of bony union is attributable to the constitutional dyscrasia (syphilitic) of the patient, which was most marked. (*See further, "Surgical Post-mortem Records," vol. I, 1877, pp. 371-72.*)

150. "Stump of leg amputated below knee, showing osteo-myelitis of the tibia, with the characteristic fungus-like protrusion of the medulla from the cut end of the bone (seen also to a much less extent in the fibula), and a flabby, sloughy condition of the flaps.

From a Mussulman, admitted with moist gangrene of the left leg and foot. He died from pyæmia thirteen days after the amputation, and twenty days after the receipt of a wound on the heel, which was the exciting cause of the gangrene." (Colles.) (*Presented by Professor J. Fayrer, M.D., &c.*)

151. Inflammation of the lower half of the right tibia, and, to a less extent, of the corresponding portion of the shaft of the fibula, with superficial caries and necrosis. On a longitudinal section being made, a circumscribed abscess in the cancellous tissue of the lower end of the tibia was discovered, and its cavity may be seen in the preparation. It is about the size of a pigeon's egg, and situated about two and a half inches above the ankle-joint, which is not implicated. (*Presented by Professor Allan Webb.*)

152. "Caries of a portion of the shaft of the tibia." (Ewart.) No history.

153. Caries of the left tibia, affecting chiefly the external compact tissue of the shaft, and the upper and lower extremities. The thickness and weight of the whole bone are at the same time greatly increased, owing to inflammatory changes. No history.

154. Caries of the whole of the shaft of the left tibia, the central portion of which has been completely destroyed. The fibula is thickened by an irregular deposit all over its surface, and there is bony union or ankylosis of the superior tibio-fibular articulation and adjacent osseous surfaces of both bones.

155. "Caries of the (left) tibia, destruction of the middle third of the shaft, and ankylosis of the middle third of the tibia and fibula by the production of new bone between them." (Ewart.)

156. "Caries of a large portion of the shaft of the tibia." The fibula is thickened by deposit of new bone.
157. "Caries and necrosis of the middle third of the right tibia." A portion of the anterior margin (shin) has exfoliated; another portion, a little lower down, is surrounded by a distinct groove of ulceration, is dead, and ready to be exfoliated. There is superficial caries also of the posterior surface of the shaft and of the head of the tibia.
158. "Caries of the upper and lower extremities of the left tibia." Both knee and ankle-joints appear to have been involved in the disease. The compact tissue of the central portion of the shaft exhibits nodular thickening, with great narrowing of the medullary canal for about three inches. No history.
159. "Caries of the lower extremities and articular surfaces of the left tibia and fibula." (Ewart.) A portion of the cancellous tissue of the former has apparently necrosed, leaving an excavation, the size of half a walnut, on the anterior aspect of the inferior extremity.
160. Great expansion and inflammatory thickening of the inferior extremities of the left tibia and fibula, with apparently superficial necrosis of the newly-formed osseous tissue, extending upwards as far as the middle of the shafts of these bones. The inferior tibio-fibular articulation is firmly ankylosed, and the fibula, about three inches above the point of the malleolus, exhibits rounded callus-like thickening and distortion, as if an old fracture had taken place at this spot. The articular ends of both bones are also superficially carious. No history.
161. Caries and necrosis of the lower half of the shafts of the left tibia and fibula, and of the bones of the tarsus, metatarsus, and phalanges. There is also bony ankylosis of the inferior tibio-fibular articulation of the ankle-joint, and of all the tarsal and metatarsal articulations. Large stalactitic processes of new bone have been thrown out behind the ankle, springing chiefly from the upper and posterior margins of the os calcis.
162. The right and left tibiæ showing nodular thickening, with superficial caries of the upper third of their shafts, particularly of the inner subcutaneous surfaces. In the right tibia there is, in addition, an adventitious growth of new bone (hyperostosis) at the lower third of the shaft, affecting the inner surface down to the malleolus, and extending backwards to the posterior surface. These conditions are all due to chronic syphilitic osteitis.—From an East Indian male, aged 25.
163. Necrosis of the lower two-thirds of the left tibia, with an imperfect attempt at substitution of the same by new bone thrown out around the dead shaft.
164. Necrosis of the right fibula. Almost the whole of the shaft of the bone has been involved, but the lower third in particular. At this part the formation of new bone is also abundant, and can be seen encircling the sequestrum.

165. Necrosis of the right tibia. A large portion of the inner surface of the shaft has exfoliated. The dead bone was removed in pieces during life, and these have now been replaced *in situ*.
166. Central necrosis of the shaft of the left fibula; the sequestrum remains invaginated. The external surface of the shaft is rough and thickened from an irregular deposit of new bone.
167. Central necrosis of the entire shaft of the right tibia, from the upper to the lower epiphysis. "The dead bone is enclosed posteriorly and laterally by new bone, which is continuous with the head and inferior extremity of the tibia, but is open in front. It is quite loose, but so incarcerated that it cannot be dislodged through any of the openings. A good deal of new osseous structure is thrown out around the fibula, which, at the lower three or four inches, is ankylosed to the tibia." (Ewart.) (*Presented by* Dr. Rose, of Penang.)
168. Necrosis of the right tibia. At the upper third of the anterior aspect of the shaft a large excavation in the bone is observed, three inches in length, one and five-eighths of an inch in breadth, and nearly half an inch deep, with thickened, rounded edges formed by newly-organised osseous tissue. The central portion of the shaft presents considerable nodular thickening from the same cause. The cancellous tissue of the head has been extensively destroyed, and the knee joint perforated. (*Presented by* Professor Harrison.)
169. "Portion of the left tibia of a Chinaman, showing a cavity, from necrosis, underneath an old ulcer." (Ewart.) The cavity is the size of a pigeon's egg, has sharp and abrupt margins, and is situated at the upper third of the internal surface of the shaft.
170. "Specimen showing necrosis of the inferior third of the (left) tibia and fibula, accompanied by gangrene of the soft parts, supervening upon an attack of malarious fever. The limb was amputated at the junction of the superior with the middle third of the leg. There was no bleeding, owing to plugging-up of the large blood-vessels. Small portions of the tibia and fibula exfoliated, but the patient made an excellent recovery." (Ewart.)
171. "A necrosed portion of the tibia of a native, aged 14 years, who had been suffering upwards of five months." (Ewart.) The dead portion of bone is eight inches in length; its upper three-fourths consist of the whole thickness of the shaft, its lower fourth of the exfoliated outer layer only.
172. Necrosis of the whole thickness of the middle third of the fibula. Removed after death from a native male "who underwent Syme's operation for cancer of the foot." (*Presented by* Professor J. Fayrer, M.D., &c.)
173. "A portion of necrosed tibia which exfoliated, reparation having been affected by granulation." (Ewart.) (*Presented by* Professor R. O'Shaughnessy.)
174. Four large exfoliations of the outer or compact layer of a necrosed tibia. (*Presented by* Mr. C. E. Raddock.)

175. "Exfoliated lamina of bone removed from the right tibia." (Ewart.) (*Presented by* Professor S. B. Partridge, F.R.C.S., &c.)
176. A portion of the necrosed shaft of the fibula, about two and a half inches in length, including the whole thickness of the bone.
177. Complete necrosis of almost the whole of the shaft of the tibia, "from a Christian boy, aged three years." The disease is recorded to have "followed after an attack of fever."
178. Necrosed right tibia from a native male, aged 45, "an opium-eater and a drunkard." "The disease was of eight years' duration, but had from time to time been in abeyance. He was emaciated and anæmic to a degree. Several pieces of bone had come away. Six months ago he received a severe injury,—a piece of stick having penetrated the limb,—and this brought back the disease with renewed energy. There were several severe hæmorrhages from the surface." Amputation below the knee was performed successfully. "After the operation the man gained flesh, and was discharged cured." (*Note by Surgeon-Major E. A. Birch, F.R.C.S., by whom the preparation was presented.*)

At the middle third of the bone there is a deep gap on the inner aspect, produced by caries and necrosis combined. It reaches almost completely through the shaft. On the outer and posterior aspects, in the same situation, the surface is roughened and tuberos from considerable deposit of new bone. Similar thickening extends downwards to the lower third of the shaft.

179. The upper half of the right fibula completely necrosed, and exhibiting, about an inch below the head, a curious ring-like expansion of the shaft, which is perforated. The opening would admit a small walnut. Below this, the shaft is greatly narrowed and constricted, reduced to a thickness of only about one-fourth of an inch. The patient is said to have suffered from "madura-foot disease." (*Presented by* Surgeon J. H. Newman, Political Agency, Jodhpore.)
180. Portions of necrosed tibia and fibula, which exfoliated in the stump of an amputation of the left leg for gangrene. (*See* prep. 170.)
181. Exfoliation in three pieces of the end of the tibia in a stump at the lower third of the right leg, amputation having been performed at this spot for elephantiasis of the foot and caries of the tarsus, in a native male patient at Dacca. "The man made a good recovery." (*Presented by* Dr. W. B. Beatson.)
182. "Secondary amputation of the right lower extremity below the knee, performed on account of the large extent of the skin of the stump sloughed off after the primary amputation, exposing the ends of the tibia and fibula, portions of which are quite destitute of periosteum. The soft parts are undergoing repair by granulation, and from the cut surface of the medullary part of the tibia granulations are visible." (Ewart.)
183. "Longitudinal sections of two metatarsal bones, removed from a native male, about 25 years of age, whose corresponding toes had dropped off from dry gangrene, and of another metatarsal, and the attached phalangeal bones of the same foot

illustrating extensive fatty degeneration, induced by imperfect nutrition, consequent on arteritis and complete blocking-up of the principal vessels by fibrin. The cancellated structure is almost wholly occupied by fat. The cortical layer of the bone is much attenuated. So soft were these bones that the sections now presented to view were as easily made with a scalpel as if they had been made through a piece of cheese. On microscopical examination a large quantity of fat globules was found. The soft part of the Haversian systems were almost completely replaced by this fat." * * * * * After amputation of the foot, "no ligatures were required, and no sutures were employed." (Ewart.) (*Presented by Professor Sir J. Fyner M.D., &c.*)

184. "Part of the first phalanx of the great toe of a woman aged 50, with fragments sliced away from the head of the first metatarsal bone, displaying an immense deposition of yellow-coloured fat, occupying the soft parts of the cancellated structure. The cortical portion of the bones has been almost completely destroyed by fatty degeneration. The sections now presented were made with the scalpel as easily as if the bone had been replaced by cartilage." (Ewart.)
185. Extensive caries of all the bones of the left tarsus,—the astragalus in particular. This bone is quite soft and spongy, its posterior half necrosed. Two rounded sequestra were found loosely imbedded in a cup-like cavity formed by carious bone on its upper surface. The same surface of the os calcis is greatly diseased, as also are the cuneiform bones; and the carious process has extended to the articular surfaces of the tibia and fibula, which were removed at the time of the operation (Syme's amputation), and are preserved with the foot.
186. Superficial caries of the os calcis, astragalus, articulating extremities of the tibia and fibula, and of the scaphoid. The cuboid and remaining bones of the tarsus are not affected. The astragalus is the bone most diseased, and its general porosity and fragility well displayed. The ankle-joint was completely destroyed. The ligaments and synovial membrane were swollen, softened, and shreddy; the articulating surfaces denuded of cartilage. Similar changes were observed in the inferior tibio-fibular and calcaneo-astragaloid articulations. From a native male, aged 30.
187. Caries of the right foot. The preparation shows extensive caries and osteoporosis of all the bones of the tarsus. The cuboid is most affected, the three cuneiform and scaphoid less so. The astragalus is also very soft, spongy, and brittle; a deep line of ulceration extends round the head of the bone so as almost to isolate it. Some new bone has been thrown out from the anterior aspect of the os calcis, and overlaps its articulation with the cuboid. The articular surfaces of the tibia and fibula are rough and eroded, and the ends of these bones very rarefied and spongy. The ends of the metatarsal bones,—especially their tarsal extremities,—show evidences of carious change and inflammatory thickening. The epiphysis of the os calcis is superficially eroded, but the epiphyses of the metatarsal

bones and phalanges are remarkably exempt from disease. From an East Indian girl, aged 12. The foot was removed by Syme's amputation. (*Presented by Dr. E. Lawrie.*)

188. Caries of the right foot, of about two years' duration. From a native male, aged 29. The bones that are affected are the os calcis, astragalus, cuboid, and scaphoid. The os calcis is carious all round the margin of its superior or articulating surface, and firm osseous ankylosis has taken place between it and the astragalus at the internal and external margins, especially well marked over the *sustentaculum tali*. The whole of the upper, inner, and outer surfaces of the astragalus are carious. Posteriorly, new bone has been thrown out so as to prolong this margin of the bone backwards in a series of sharp spicula. Anteriorly, the upper surface of the head of the bone is seen hollowed into a cavity the size of a sparrow's egg. The whole bone is very light and spongy. The superior and outer margins of the scaphoid, and the adjoining outer margin of the cuboid, are the only portions of these bones similarly affected (rough and carious). All the other bones of the tarsus and metatarsus were found healthy. The foot was removed by Syme's amputation at the ankle-joint.
189. "Os calcis (left) excised for necrosis. There is an opening on the outer surface of the bone leading to a cavity, in which a large sequestrum lies loose. The bone around this cavity is abnormally dense, as shown by the section." (Colles.) (*Presented by Dr. David B. Smith.*)
190. "Terminal phalanx of the great toe, removed on account of syphilitic onychia." (Ewart.) The bone seems to be completely necrosed.
191. Great inflammatory thickening (hypertrophy) of the upper and lower jaws of a horse. The osseous tissue, especially of the lower maxilla, is greatly condensed and sclerosed, as is well seen in the sections which have been made into the bone on the right side. There is also superficial caries of both jaws, affecting here and there, irregularly, the compact tissue.
192. "A large sequestrum from the head of an elephant. The polygonal arrangement of the capacious frontal cells of this animal is well illustrated." (Ewart.)

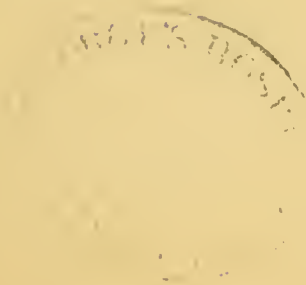


CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART II.

DISEASES OF THE JOINTS.
DISEASES OF THE MUSCLES, &c.
DISEASES OF THE SPINE.

SERIES III, IV, AND V.



SERIES III.

DISEASES OF THE JOINTS.

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DISEASES OF THE JOINTS.

1. Preparation showing the right sterno-clavicular articulation laid open. In the fresh state, the synovial membrane and ligaments were found swollen, softened, and abnormally vascular. The cartilage at the sternal end is thinned and eroded, exposing bare bone over a space the size of a split pea. The joint was occupied by about half an ounce of thick yellow pus.—From a case of pyæmia—a native female, aged 60. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 393-94.)
2. Chronic inflammation of the right shoulder-joint. The capsule has been partially destroyed. The cancellous tissue of the head of the scapula, including the glenoid cavity, is broken down and carious; the encrusting cartilage of the latter has been absorbed from its inner half. The head of the humerus is not affected. No history. (*Presented by* Professor R. O'Shaughnessy.)
3. "Preparation showing peeling-off of the articular cartilage from strumous disease of the cancellated structure of head of the left humerus. The patient, aged 31, a Dane, was admitted into hospital on the 6th December 1862, suffering from pain in the left shoulder-joint. He had first felt symptoms of mischief three months before his admission, but had never intermitted his work as an able seaman. The pain of late had considerably increased. His general health appeared good. He was treated with tonics and counter-irritation, the limb being kept in a state of perfect repose. For some time he appeared to improve, but about the end of February 1863 symptoms of phthisis supervened, and he sank under the disease on the 15th May. The lungs were infiltrated with tubercle. All the other viscera were healthy." (Ewart.) (*Presented by* Professor S. B. Partridge, F.R.C.S., &c.)

* Sub-periosteal.

4. The articular ends of the right humerus, and of the radius and ulna, excised for disease of the elbow-joint.—From a native female (Rominni). The articular cartilage is seen to have undergone much thinning and extensive absorption, and, where the bone is thus exposed, it is rough and carious. (*Presented by Professor J. Fayrer, M.D., &c.*)
5. Excision of the bones of the right elbow-joint. The articular surfaces are extensively carious; the outer condyle of the humerus necrosed,—hollowed out into a cavity the size of a hazel-nut.
6. Excision of the right elbow-joint for disease. Partial bony ankylosis existed between the head of the radius and outer condyle of the humerus, and between the coronoid process of the ulna and margin of the trochlear surface of the humerus.
7. Resection of the right elbow-joint on account of fracture followed by ankylosis—mostly bony and immovable.

Case of Harri Shaha, a native of the Pubna district, aged 35.

When bathing six months ago, the river bank fell in upon him, and he sustained a fracture with dislocation of both elbow-joints, which, on admission, were found completely ankylosed in the extended position. The right elbow-joint was excised. The injury here appears to have been fracture of the olecranon, and probably also of the tip of the coronoid process of the ulna, with displacement backwards of this bone. A portion of the head of the radius (its outer third) seems also to have been crushed. The lower end of the humerus presents a roughened surface posteriorly, and to a less extent anteriorly, from the presence of newly developed bone, a portion of which fills in the olecranon fossa at the back of the trochlear surface, and projects slightly through the thin septum separating the olecranon and coronoid fossæ, which septum appears to have been absorbed, or was (as is sometimes the case) originally wanting. The excised portions of bone consist of about two inches of the lower end of the humerus, the head of the radius, and about an inch of the upper extremity of the ulna. (*Presented by Professor H. C. Cutcliffe, F.R.C.S., &c.*)

8. Resection of the right elbow-joint in consequence of firm bony ankylosis, associated with an old transverse fracture of the humerus through the condyle. (*Presented by Professor H. C. Cutcliffe, F.R.C.S., &c.*)
9. Bony ankylosis of the right elbow-joint, the result of an old injury. The forearm was immovably fixed at a right angle to the arm. Resection was successfully performed. The preparation exhibits the parts removed by the operation.
10. The right elbow-joint (lower end of the humerus and upper ends of the radius and ulna), removed by sub-periosteal resection from a native male, aged 18, on account of rigid and chiefly bony ankylosis; the result, apparently, of an old injury to the articular ends of the bone. (*Presented by Professor H. C. Cutcliffe, F.R.C.S., &c.*)
11. Complete bony ankylosis of the left elbow-joint. The radius is twisted forwards and inwards, and lies on a plane anterior to the ulna. No history.

12. Gunshot injury to the right elbow-joint.—From Saifoo, a Mahomedan, aged about 40. While the bones of the forearm are uninjured, the articular extremity of the humerus is extensively comminuted. "The largest fragment, constituting the chief part of the articular end of the bone, was completely detached, and driven down partly behind the joint and partly internal to the olecranon." The two other (lateral) portions of the humerus (seen in the preparation) were sawn off at the time of the operation, as also the articular ends of the radius and ulna, although uninjured. Resection was performed on the day following the accident, and the patient made a good recovery. (*See further, "Indian Annals of Medical Science," vol. XXXIV, p. 452.*) (*Presented by Dr. E. A. Birch, Civil Surgeon, Hazaribagh.*)

13. A preparation showing the results of excision of the elbow-joint for gunshot injury. The operation was performed by Dr. T. E. Charles at the siege of Delhi in 1857. The patient, a European, died in the General Hospital, Calcutta, from hepatic abscess in July 1868, *i.e.* 11 years after. "He had sufficient motion left to enable him to bend the elbow to carry the hand to the mouth with facility."

An examination of the joint shows that firm fibrous union has taken place between the remains of external condyle of the humerus (the only portion, apparently, of that bone removed) and the base of the olecranon process of the ulna, the process itself having been excised; also between the internal condyle and the same portion of the ulna posteriorly, and, with its coronoid process (which still exists) anteriorly. The head of the radius is wanting. The shaft of this bone below the excised head is smooth and rounded, and is fixed to the outer side of the ulnar shaft by ligamentous tissue, which still permits of limited supination and pronation. In the elbow-joint itself the movements are very free. Possible flexion, as might be expected, is excessive; extension, more limited.

14. "Carpal and metacarpal bones of a Hindu Faquir. There is ankylosis of the metacarpal bones of the fore and middle fingers to the trapezoid and os magnum, and of the first and second phalanges of the same fingers to each other." (Ewart.)

The ankylosis in this case is probably attributable to long disuse, as a not infrequent mode of penance among this class of people is to hold up the arm for an indefinite period, until the whole extremity becomes withered and atrophic; possibly ankylosis sometimes takes place during this process.

15. A preparation showing almost symmetrical deformity of the carpal extremities of the radius and ulna of both sides, caused by the projection of short irregular bony ridges or prominences of newly-formed bone, especially in connection with the grooves for the flexor and extensor tendons, and particularly of the latter. Both radii are also twisted somewhat backwards and inwards, while the ulnæ have a slight inward curvature. These changes appear to be due to chronic rheumatic arthritis, but there is no history of this affection on record, as

no enquiry was made during life, although the deformity was noticed and was very distinctly visible.

The subject was an aged East Indian (male), who died from chronic dysentery. ("Medical *Post-mortem* Records," Vol. II, 1878, pp. 989-90.)

16. Preparation from a case of gunshot injury of the right hand. The patient, a European, H. G., of Kyouk Phyoo (Burmah), received a pistol-shot through the right wrist. As the wound refused to heal entirely, and such cicatrices as had formed in connection with it frequently ulcerated, rendering the hand useless, amputation through the forearm was performed.

The charge, composed of small shot, was received in the palm of the hand. Several pellets were removed from time to time, being found encysted in the tissues bordering upon the wound.

The preparation now shows a deep carious cavity, into which the tip of the finger may be inserted, situated in the carpus, immediately above the second and third carpo-metacarpal articulations. In this cavity several of the shots are still to be seen. Portions of the trapezoid, os magnum, and scaphoid bones appear to have been absorbed. (*Presented* by Dr. L. H. Lees, Civil Surgeon, Akyab.)

17. Chronic morbus coxæ, resulting in the absorption of cartilage from the head of the femur (left), which is atrophied and carious; and softening of the ligaments of the joint following inflammatory thickening. The teres ligament has apparently been destroyed. No history.

18. A dry preparation showing extensive caries of the head of the right femur, and of the corresponding acetabular cavity of the ilium, from suppurative disease of the hip-joint. The whole of the articular cartilage covering the head of the femur was disorganized, exposing rough carious bone; the round ligament destroyed, and a portion of the femoral head above the attachment of this ligament absorbed. About an inch below the great trochanter, on the anterior aspect of the bone, is an opening, the size of an eight-anna piece, and another, nearly as large as a rupee, on the inner aspect of the neck. Both these lead into a large hollow cavity, occupying the great trochanter and upper part of the shaft. This was found filled with purulent, disintegrating osseous tissue. The cartilage investing the acetabular cavity was also more or less destroyed, leaving the bone bare, carious, and greatly thinned, but not perforated. The soft structures around the joint were pus-infiltrated, the muscles gangrenous-looking.

The subject was a native (male), aged 35, who died in hospital. ("Surgical *Post-mortem* Records," Vol. I, 1876, pp. 345-46.)

19. Excised head of the right femur, from a native girl, aged seven, who had suffered from disease of the hip-joint for about 18 months. The bone has been removed just below the trochanters. The articular surface of the head is rough, bare, and almost denuded of cartilage. The compact bony tissue has also, for the most part, disappeared, and the cancellous structure is very soft

and friable. The great trochanter presents a semi-cartilaginous condition. The acetabulum was quite healthy. (*Presented by Professor H. Gayer, M.D.*)

20. Head of the left femur, excised for suppurating hip-joint disease. From a Mahomedan boy, aged 12 years.

The bone has been removed on a level with the base of the great trochanter. The head of the femur is seen rough and bare; the investing cartilage had almost entirely disappeared. The neck is short, and set at a very obtuse angle with the trochanter major; the cancellous tissue of both these parts was abnormally soft and vascular. The acetabulum was healthy. (*Presented by Professor H. Gayer, M.D.*)

21. The right os innominatum, showing great expansion of the acetabular cavity, with an exuberant, tuberculated growth of new osseous tissue around the brim, and extending upwards as far as the inferior curved line of the ilium. (The crest of the latter is also somewhat expanded and rough.) The diseased condition is probably due to chronic rheumatic arthritis and osteitis, but there is no history of the specimen on record.

22. Complete bony ankylosis of the hip-joint. A considerable quantity of new bone—rough, tuberos, and acicular—has also been thrown out in the neighbourhood of the joint, especially over its superior and internal aspects, and the posterior surface of the upper third of the shaft of the femur is thickened from the same cause.

23. Perfect bony ankylosis of the right hip-joint. The head of the bone is placed at right angles to the shaft; its cancellous structure (as may be seen in the vertical section which has been made) blends completely with that of the acetabulum. The compact tissue of the shaft of the femur is thickened above, thinned towards the lower end; and here also the medullary canal is expanded. Both the femur and the portion of ilium preserved are light and slender, and the inferior epiphysis of the former is wanting, all of which are indications that the subject was a young child. No history.

24. Acute synovitis of the left knee-joint. The serous membrane of the joint is thickened and swollen; in parts, ruptured and softened. The cartilage investing the under surface of the patella and outer condyle of the femur is superficially eroded. "There were burrowing abscesses in the popliteal space, and effusion of lymph between the muscles in the same region." (*Presented by Professor Harrison.*)

25. "Preparation showing general thickening and alteration of the synovial membrane of the knee-joint, partial ulceration of the articular cartilage of the condyles of the left femur, and of the outer half of the corresponding patella" (Ewart). The semi-lunar fibro-cartilages are thickened; the mucous and alar ligaments destroyed. No history.

26. Right knee-joint, exhibiting the effects of chronic inflammation, viz. thickening and opacity of the synovial membrane; softening of the ligaments; ulceration of the articular cartilage over both condyles

of the femur, and outer half of the patella; the deepest ulceration existing in the intercondyloid groove, where also the subjacent bone is exposed.

27. Left knee-joint opened from behind. "There is extensive destruction of the articular cartilage of the condyles of the femur and of the head of the tibia, with great alteration and thickening of the remaining synovial membrane" (Ewart). The inner semilunar fibro-cartilage is deeply ulcerated and partially absorbed, the outer has been completely destroyed.
28. "Knee-joint (right) opened, illustrating extensive ulceration and destruction of the articular cartilages of the patella, of the tibia, and condyle of the femur" (Ewart). The head of the tibia, especially its outer half, has been greatly absorbed, and now forms a deep cup-shaped cavity with carious bony walls, the cartilage having entirely disappeared. The synovial membrane exhibits pulpy softening, and the growth of delicate villous excrescences over portions of its internal surface. No history.
29. An opened knee-joint (right), showing great thickening and expansion of the synovial membrane, with "ulceration and peeling-off of the cartilage of the condyles of the femur" and head of the tibia. "A large abscess" at the lower and outer part of the thigh, "communicates with the interior of the joint." (*Presented by* Professor O'Shaughnessy.)
30. Extensive ulceration of the cartilages of the left knee-joint; thickening and vascularity of the synovial membrane; and caries of the articular ends of the bones. A rod is seen projecting into the joint through an opening, the size of a crow-quill, in the head of the tibia. The disease had apparently spread to the joint from this bone. (*Presented by* Dr. Baddeley.)
31. The diseased knee-joint of a patient who died in the hospital, showing "ulceration of the articular cartilages and of the subjacent bone, with efforts at reparation," by means of an opaque, fibrous, cicatricial tissue covering the ulcers, and commencing churning of the osseous surfaces. (*Presented by* Professor Allan Webb.)
32. Chronic disease of the right knee-joint. There is extensive necrosis of the head of the tibia, as well as erosion of the articular cartilage investing it and the outer condyle of the femur. The ligaments generally are softened and destroyed. No history.
33. Scrofulous or strumous disease of the left knee-joint. The articular cartilage from the condyles of the femur, from the patella, and from the head of the tibia has been almost entirely removed. The internal semilunar fibro-cartilage is destroyed, the external thickened and ulcerated. Both condyles of the femur, the patella, and the inner half of the head of the tibia are extensively carious; the inner condyle showing, further, a circular, almost detached sequestrum, the size of a hazel-nut, on its inferior aspect. The ligaments and synovial membrane of the whole joint are opaque, softened, and in a state of pulpy degeneration. The muscular and connective tissues all round the joint are thickened and matted

- together. The articular extremities of the bones are soft, friable, and porous. (*Presented by* Professor O'Shaughnessy.)
34. Right knee-joint, showing pulpy degeneration of the synovial membrane; softening and erosion of the articular cartilages; and great thickening and infiltration of the surrounding soft parts. The joint appears to have been immovable from soft ankylosis. The disease is said to have been "serofulous."
 35. Injured right knee-joint. At the upper and inner aspect of the internal condyle, the articular cartilage has been chipped off, over a space an inch long and half an inch wide, of oblong shape. The bone here is rough and exposed, and communicated with burrowing abscesses in the neighbourhood. "The patient, Shaik Azzier, a Mahomedan coachman, aged sixteen years, was admitted into hospital with a lacerated and punctured wound over the inner aspect of the upper part of the joint, caused by the sudden falling of a horse on which he was riding. The thigh was amputated" on the third day after admission, but the patient died.
 36. Right knee-joint, showing ulceration and removal of large patches of the articular cartilage from the upper part of the outer, and lower and back part of the inner condyle of the femur, from the inner half of the tibia, and outer two-thirds of the patella, with caries of the subjacent bone in all these situations. (*Presented by* Professor J. Fayer, M.D., &c.)
 37. "Destructive inflammation in and around the left knee-joint, following a contused wound on the inner side of the joint. Both above and below the joint are abscesses, whose sides are now held apart with glass rods. The joint contained pus when opened. The synovial membrane around the patella is greatly thickened; when fresh, it was of deep crimson colour, and pulpy consistence. The anterior crucial ligament was so softened that it tore across on flexing the knee. The semilunar cartilages are detached from the tibia and completely disorganized. The cartilage on the edge of the inner condyle of the femur, and on the upper edge of the patella is completely absorbed, the bone being exposed; that covering the inner articulating surface of the tibia is almost quite detached from the bone, from which it can be readily stripped. Amputation was performed seven weeks after the injury" (Colles). The patient, however, died from osteo-myelitis of the femur and pyæmia (*see* Preparation 119, Series II).
 38. "Destructive inflammation in and around the right knee-joint, following a wound (opening into the joint), inflicted accidentally on himself by a Hindu, aged 21, while cutting grass. Amputation was performed twenty days after the injury.
- "There is a large abscess with ragged walls in the popliteal space, and another over the outer condyle of the femur. The synovial membrane round the patella is thickened and pulpy, and there is extensive destruction of the articular cartilage over both condyles (especially the inner), and on the internal articular surface of the tibia" (Colles).

The patient died after amputation at the hip-joint had been performed for osteo-myelitis following the primary amputation of the thigh.

39. Acute suppurative synovitis. The interior of the right knee-joint is exposed. It was found to contain about four ounces of grumous pus, and shreds of dark slough derived from the synovial membrane. The latter was throughout highly vascular, pulpy-looking, and swollen, and portions had not only a sloughy appearance, but actual sphacelus had occurred of a part of the superior fold of the same. Thus perforation of the joint, and burrowing of its purulent contents—upwards and outwards beneath the tendon of the vastus externus—had taken place. The ligaments of the joint were softened and abnormally vascular; the articular cartilage not affected.

40. The left knee-joint of a Hindu (male), aged 25, showing chronic synovitis, with the presence of numerous warty growths or vegetations covering almost the whole of the inner surface of the serous or synovial membrane, which is greatly thickened and leathery in consistency, and, in the recent state, was highly vascular and injected throughout. The articular cartilage seems thinned over both condyles of the femur and head of the tibia, but is not eroded or ulcerated, and the subjacent bony structures (divided longitudinally), were found quite healthy.

41. Suppurative Synovitis (Pyæmic).—The left knee-joint of a native female, aged 50. The whole of the synovial membrane is much thickened, of a bright rosy-pink colour (in the fresh state), and highly vascular. The joint contained fully four ounces of thick yellow pus. The cartilage covering the lateral aspects of both condyles of the femur is eroded, and the bone exposed and highly vascular. The cartilage has been removed over a small space,—the size of a split pea,—at about the centre of the inferior aspect of the external condyle, and also at the centre of the under surface of the patella, for a space the size of a four-anna piece. The crucial and other ligaments of the joint are soft, swollen, and highly injected. The medulla of the femur was abnormally vascular, semifluid, and pus-infiltrated (osteo-myelitis); that of the tibia unaffected.

The patient received a superficial injury (a contusion) on the ulnar aspect of the right forearm. This was followed by local suppuration, burrowing abscesses formed, and the ulna became partially denuded of periosteum. Fever, with rigors, supervened; the left knee-joint then swelled (no other joints), and ultimately dysentery of severe type complicated the case and caused the patient's death. (See further, "*Medical Post-mortem Records*," Vol. I, 1873, pp. 209-10.)

42. Gonorrhœal Rheumatism.—The left knee-joint of a native male, aged about 40. There was intense vascularity of the synovial membrane and of the ligaments of the joint, which latter also presented a pulpy, softened condition. The cartilage investing the inferior surface of the condyles of the femur is seen

superficially eroded over two or three small, strictly circumscribed spots. The articular cavity contained about half an ounce of thick yellow pus. The right knee-joint, and the right shoulder, elbow, and wrist-joints all presented the evidences of recent acute synovitis. (*See further, "Surgical Post-mortem Records,"* Vol. I, 1875, pp. 179-80.)

43. Acute disorganization of the left knee-joint of a native female, aged 20 years. The limb was amputated at the lower third of the thigh, on account of hectic fever of a fortnight's duration. The joint had been inflamed for three weeks, but there was no history of any external injury, nor of gonorrhœa, syphilis, &c.

The fibro-cartilages of the joint are seen almost entirely destroyed, the articular cartilages extensively eroded, and in parts this reaches the bony surfaces of the femoral condyles and tibial head, which are roughened and highly vascular (in fresh state). The ligaments and synovial membrane were found softened, pulpy, and pus-infiltrated. The patient died after the operation from osteo-myelitis and pyæmia (*see Preparation 123, Series II*). (*Presented by Dr. Edward Lawrie.*)

44. Right knee-joint, showing an extensive villous or warty condition of the synovial membrane, opacity and thickening of the ligaments, almost complete denudation of the cartilagenous articulating surfaces of the femur and tibia, and superficial erosion of the bone at these situations, all these changes being due to chronic arthritis. From a native (male), aged 45, who died in hospital.

45. Knee-joint (right), exhibiting extensive ulceration of cartilage, and denudation with superficial necrosis of the articulating surfaces of the tibia and femur. These changes were associated with large burrowing abscesses in the thigh and leg, all connected with the disorganizing joint. Half an ounce of pus was evacuated on opening the joint *post-mortem*. There was no history of injury, but the disease was acute, apparently only of six weeks' duration. No other joints were affected.--From a native male patient, aged 35. (*"Surgical Post-mortem Records,"* Vol. I, 1877, pp. 447-48.)

46. A preparation illustrative of soft or fibrous ankylosis of the right knee-joint, the result of chronic inflammation. The joint had been kept flexed for five months. Short bands of fibrous tissue extend between the opposed surfaces of the fibro-cartilages and osseous structures of the articulation. The former are delicate, and have to a great extent been broken down on forcibly opening up the joint; the latter are thicker and firmer. The bony surfaces are extensively denuded of cartilage, and superficially eroded. The head of the tibia is very soft, dry, and brittle. From a native male, aged about 30.

47. Scrofulous or strumous disease of the right knee-joint. The whole joint is disorganized, and was almost completely ankylosed. On forcing it open on *post-mortem*, the union between the inner

condyle of the femur and the tibia was so firm, that a portion of the former gave way, and may be seen still adherent to the inner articular surface of the tibia. The cancellous tissue is very soft, brittle, and infiltrated with caseous or fatty material. The external condyle of the femur is almost completely denuded of cartilage, and short bands of thickened fibrous tissue pass between it and the outer articular surface of the head of the tibia. The patella is drawn upwards and outwards, and fixed at the intercondyloid notch of the femur. All the ligaments of the joint are more or less softened and disorganized.

A large unhealthy sinus, discharging pus, was situated on the anterior and outer side of the joint, and a glass rod now shows its direction, upwards and inwards, through the softened bony tissue of the head of the tibia into the knee-joint itself.

The patient was a Hindu, aged 31; the duration of the disease about nine months. He improved greatly under local and constitutional treatment and rest, and was about six months in hospital, when suddenly he had a smart attack of hæmoptysis ("without any premonitory symptoms"). This recurred profusely after two days, and was the immediate cause of death. A small excavation was found at the apex of the left lung, with deposit of miliary tubercle in and around it for some distance.

48. "Osseous ankylosis of the knee—broken down partly during life, partly after death. Case of Rajbullub, aged 29. It appears that about eight years ago the patient had suffered from inflammation of the right thigh involving the knee, but on admission into hospital he stated that the immobility and painfulness of the knee-joint had only existed for the last three months. He was placed under chloroform, and the knee, which was flexed nearly to a right angle, was flexed to an angle of 20° , and then extended to an angle of 120° , beyond which no justifiable degree of force would move it. Some adhesions, supposed to be fibrous, were felt to give way at the time. The patella remained as it had been, and was till death united to the anterior surface of the femur. In a few days after the extension, an abscess formed above and to the outer side of the knee-joint, from which pus mixed with a large quantity of coagulated blood escaped. The abscess continued to burrow up among the muscles at the back and outside of the thigh in spite of frequent counter-openings. The knee-joint, however, presented no signs of swelling, nor any marked tenderness." The patient gradually sank from exhaustion, and died about a month after the operation. On *post-mortem* examination, the knee-joint was found to "communicate with the abscess in two places, above and outside the patella, and at the back of the joint, where, through an opening in the ligaments, the posterior surface of the outer condyle could be felt denuded and rough. There was hardly a trace of cartilage left in the joint. Bony union had taken place between the patella and the front of the outer condyle, but was torn through on reflecting the patella to examine the joint. Similar

bony union had also taken place between the lower surfaces of the condyles and the corresponding surfaces of the tibia, but were found to have been broken down in extending the joint during life. The rough surfaces of the torn bony ankyloses are well seen. The bones were soft, readily pierced with the knife" (Colles). (*Presented* by Professor J. A. Purefoy Colles, M.D., &c.)

49. Extensive disorganization of the right knee-joint, with partial bony ankylosis. The latter, found between the condyles of the femur and the tibia on exposing the joint, breaks down easily. The articular cartilage has almost entirely disappeared from the condyles of the femur, which are bare and rough, the bone excavated and necrosed. On the inferior aspect of the external condyle may be seen a sequestrum, about the size of a small hazel-nut, still invaginated by rough carious bone, and immediately below this a somewhat larger excavation holding a loose sequestrum (now fixed by pins). The articular surfaces of the tibia are also deeply excavated and necrosed; the cartilage absolutely wanting. The patella is hollowed out on its inferior surface, and partially denuded of cartilage. All the ligaments of the joint are more or less destroyed, their remnants are thickened and opaque. The disease is said to have been of six years' duration; its origin doubtful.

There were burrowing sinuses around the joint, which itself contained a considerable quantity of pus, was semi-flexed, and partially ankylosed. Amputation was performed at the lower third of the thigh.—From a native male patient, aged 38 years. (*Presented* by Professor K. McLeod, M.D.)

50. Right knee-joint, almost immovably ankylosed. The tibia and fibula are bent backwards at an acute angle, owing to the contraction and shrinking of the hamstring tendons, and terminate in a conical stump about four inches from the joint.—From a native male (Hindu) aged 25, of intemperate habits, and with calcareous degeneration of the peripheral vessels (arteries). The leg was amputated three years previously for dry gangrene of the foot. The patient was re-admitted in 1874 with similar gangrene of the left foot and leg, and died from exhaustion and dysentery before any operative interference could be undertaken. The femoral, popliteal, and tibial arteries of the left side were found on *post-mortem* examination partially calcified, and greatly contracted in calibre, from the profunda femoris downwards. In this preparation, the vessels (popliteal and tibial) are pervious throughout, *i.e.* as far as they can be traced into the stump; they are, however, much contracted and rigid. The internal popliteal nerve presents a bulbous enlargement at its termination in the stump. (*See further*, "Surgical *Post-mortem* Records," Vol. I, 1874, pp. 81-82.)

51. Deformity of the right knee-joint, the result of disease. The patient, a Mahomedan, aged about 40, stated that about fourteen months ago he first noticed that the joint was swollen

and painful. The swelling gradually increased for some months, but at last subsided "by bursting of itself," and then the leg became displaced backwards. There was a history of syphilis followed by mercurial salivation. The preparation exhibits a spontaneous dislocation, backwards and outwards, of the tibia and fibula from the femur. The condyles of the latter project sharply beneath the skin, and are well defined in this position, as is also the patella, which is seen immovably fixed in the superior intercondyloid fossa. The integuments over these structures are very tightly stretched, thinned, and superficially ulcerated in parts.

52. "Left knee-joint of Lieutenant C., of the Bengal Artillery, who was shot in the knee in the attack on Dewangiri, Bhootan, and died of pyæmia in Calcutta. The ball, an irregular leaden matchlock bullet, preserved with the specimen, entered the cavity of the joint on the inside, and lodged in the inner condyle, whence it was removed after the patient reached Calcutta. The aperture of entrance in the skin has been preserved; the bone around the ball is carious and was pus-infiltrated. The interior of the joint was quite disorganized and contained pus. The cartilage covering the outer condyle and the back of the patella has been partly absorbed, exposing the bone. The femur is almost completely detached from the soft parts by the formation of extensive abscesses. The veins of the thigh were healthy. A large pyæmic abscess had formed under the deltoid, and opened into the right shoulder-joint, the cartilages of which were eroded. There was a large patch of dead tissue in one lung, and a similar one in each kidney. The heart and other viscera were healthy" (Colles). (*Presented by* Assistant Surgeon R. W. Carter.)
53. "Stump removed by a second operation after failure of primary amputation at the ankle-joint, owing to deficiency in the quantity of the soft parts, and necrosis of the ends of the bones. * * * The roughened and necrosed bones can be seen protruding through the granulating surface of the stump" (Ewart).
54. "Stump of a case of Syme's amputation at the ankle-joint, showing that adhesive union has taken place between a large portion of the incised surfaces" (Ewart). (*Presented by* Professor J. Fayrer, M.D., &c.)
55. "Left foot of a Hindu, amputated by Syme's operation for disease of the tarsus, caused by a brick falling upon it four years before. There are several sinuses on the dorsum of the foot, leading down to diseased bone. The astragalus and calcaneum are quite soft; a knife can be thrust through them with ease" (Colles). (*Presented by* Professor S. B. Partridge, F.R.C.S., &c.)
56. A dry preparation of the right foot, amputated by Syme's method for scrofulous disease of the tarsus. The subject was a native (male), aged 32. All the bones of the tarsus are seen to be very light and spongy, rarefied, and extremely brittle. The cuneiform bones, however, seem to have suffered most. The margins of the astragalus and cuboid are carious, and the disease has

extended forwards to the bases of the four outer metatarsal bones. Almost all the tarsal and tarso-metatarsal joints were disorganized, denuded more or less of cartilage, the connecting ligaments softened, highly vascular, and shreddy or pus-infiltrated. The disease appeared to have been strumous in character, and to have commenced in one or more of the tarsal articulations on the inner side of the foot, spreading gradually to the rest. The patient was very weak and emaciated, there was profuse discharge from sinuses which covered the dorsum of the foot. Amputation was performed as a last resource. Death, however, was the result, from tubercular peritonitis, &c.

SERIES IV.

INJURIES AND DISEASES OF MUSCLE, &c.

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- 1.—INFLAMMATION OF, 10.

DISEASES OF THE MUSCLES, &c.

1. Extensive laceration of the muscles and tendons of the palm and back of the hand, the result of a machinery accident. Amputation through the forearm had to be performed on the fifth day after the receipt of the injury, on account of the supervention of tetanus.
2. "Thumb and carpus of the right hand of a native woman, amputated at the wrist-joint, the remainder of the hand having been bitten off by a shark. The carpo-metacarpal joint of the thumb is also opened" (Colles).
3. "Arm removed at its upper third from a case of shark-bite." The preparation is interesting in showing the terrible amount of injury capable of being inflicted by a bite from this animal. The limb seems to have been seized just about the bend of the elbow and bitten through, soft parts and bone being equally lacerated and crushed; the joint exposed; the flexor muscles stripped off the front of the forearm; a large gaping, ragged wound left above the olecranon; and a series of transverse lacerated wounds are observed at short intervals along the posterior aspect of the

* See also Series VI.

† See also Series XVII.

whole forearm, as if due to successive grips after the main hold at the elbow was abandoned by the animal. Lastly, a large lacerated wound is seen at the back of the wrist-joint, and lesser ones over both the anterior and posterior aspects of the hand. One of these appears to pass quite through the inner side of the palm, and has almost detached the little and ring fingers from the rest. (*Presented by Professor J. Fayrer, M.D., &c.*)

4. "Four fragments of muscle from the plantar region, in which extreme fatty degeneration was manifested" (Ewart). Under microscopic examination, the transverse striæ are less distinct than normal, and there is a moderate amount of dark, granular, fatty metamorphosis of the muscular fasciculi. No history.
5. A large mass of inflamed and disintegrating muscle (myositis), consisting chiefly of the adductors of the left thigh.—From a native male, aged 20, who died from erysipelas. The muscular fibre, though much softened, and breaking up much more readily than normal when frayed out with needles, yet shows on microscopical examination very distinct striation of the fasciculi, and an entire absence of all degenerative change; but the sarcolemma is crowded at points with small round cells or nuclei, and the interfibrillar connective tissue has considerable sized depôts of granular nucleated cells distributed throughout its extent at irregular intervals, many of which cells appear to be true pus-corpuscles, and undoubtedly indicate proliferative irritation. ("Surgical *Post-mortem* Records," Vol. I, 1880, pp. 703-4.)
6. A portion of the adductor longus muscle from the inner side of the right thigh, showing extensive suppurative softening, which was associated with a large and spreading gluteal abscess.—From a native male (Hindu), aged about 20, who died in hospital.
The microscopic changes are similar to those described in connection with Preparation 5. ("Surgical *Post-mortem* Records," Vol. I, 1880, pp. 707-8.)
7. A portion of the diaphragm, exhibiting great thickening of its peritoneal surface, due to the presence of a lymphoid or adenoid growth, forming in parts distinct nodular swellings, in others a more diffuse infiltration, which extends also into the muscular substance, and may be traced with the microscope disparting and compressing the muscular fasciculi. The liver, spleen, kidneys, &c., were all similarly affected. The patient, a native female, aged 40, was admitted into hospital suffering from anæmia, and had a slight leucorrhœal discharge. She died, apparently from exhaustion, on the tenth day. The morbid growths were not suspected during life, only discovered on *post-mortem* examination.
8. A portion of the diaphragm with lymphoid infiltration, from a case of lymphadenoma, or Hodgkin's disease: a native female, aged 25. Small granules and flattened nodules, consisting under the microscope of proliferating lymphatic or lymphoid cells, are seen to separate the muscular fasciculi, and form a distinct infiltration of this tissue. In some parts much fatty infiltration of the muscular fibre accompanies the new growth, and the latter is

also, here and there, found undergoing incipient caseation. The lymph-glands in the anterior mediastinum, the pleuræ, and pericardium, the mesenteric glands, spleen, and peritoneum generally were all similiary infiltrated. ("Medical *Post-mortem* Records," Vol. I, 1875, pp. 517-18.)

9. A portion of the diaphragm infiltrated with soft carcinomatous nodules, secondary developments to an encephaloma of the femur. The lungs, lumbar glands, &c., were similarly affected. The microscopic structure of these nodules is that of true encephaloid cancer. ("Surgical *Post-mortem* Records," Vol. I, 1877, pp. 397-98.)

10. A very greatly hypertrophied bursal cyst, which occupied the upper and inner portion of the popliteal space, and communicated with the left knee-joint. The cyst is irregularly oval in shape, and rather larger than a pomegranate. Its walls are very thick, in parts fully half an inch in diameter. This is due to the blending with its external surface of much of the loose fibro-cellular tissue of the popliteal space, and of muscular fibres derived from the hamstring muscles; also to inflammatory changes in the cyst wall itself, the inner surface of which is coated with patches of semi-organized lymph. On dissection, the inflamed and enlarged bursa was identified as that which lies beneath the inner head of the gastrocnemius muscle, and which, in this instance (as is not uncommon), communicated with the knee-joint through an opening in the posterior ligament. This opening may be seen in the preparation. Around it the bursal sac is much thinned.

The patient, a Hindu, aged 25, attributed the origin of the growth to a fall from a tree three years ago (*i.e.* previous to admission into hospital), when he alighted on the knees, and a month after, a small swelling was noticed by him in the left popliteal space. It gradually increased, until it became a distinct and large tumour, which was "tapped" by a native barber, and "half a pint of watery fluid with blood and pus" evacuated. He died somewhat suddenly in hospital.

On *post-mortem* examination the cyst itself, as well as the knee-joint were found filled with purulent fluid, and the interior of the bursa, and the synovial membrane of the joint, dark and sloughy in appearance.

The popliteal vessels were much displaced, but not involved.

SERIES V.

DISEASES OF THE SPINE.

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- 10.—SPINA BIFIDA,‡ 23.

* See also Series I and VIII.

† See also Series XVII.

‡ See also, with other congenital diseases, Series XVIII.

DISEASES OF THE SPINE.

1. Caries of the anterior arch and articulating processes of the atlas.
No history.
2. Caries of the whole of the second cervical vertebra. No history.
3. Caries of the sixth cervical vertebra, with softening and ulceration of the intervertebral fibro-cartilage between it and the vertebra prominens (seventh). No history. (*Presented by* Professor Edward Goodeve.)
4. Superficial caries (syphilitic) of the axis and third cervical vertebra, due to the pressure of a gummatous tumour, which grew in this situation, and had apparently developed from the anterior common ligament or periosteum, and pressed upon the pharynx and upper part of the larynx, having attained the size of "half a hen's egg." From a European. (*Presented by* Dr. A. Vans-Best, Presidency General Hospital.)
5. "Cervical vertebræ of Bhuban, aged 19 years, operated upon on the 21st February 1869, for a cystic tumour on the right side of his neck. The tumour was attached to the intervertebral groove of the second and third cervical vertebræ" (Collès). The bodies of the second and third cervical vertebræ are seen hollowed out on the right side by the growth of the above cyst; and the intervertebral cartilage in this situation seems also to have become absorbed.
6. Firm bony ankylosis of the second and third cervical vertebræ.
No history.
7. "Five cervical, and the whole of the dorsal and lumbar vertebræ. Caries of a part of the body of the second dorsal, of the articulating surfaces of the 11th and 12th dorsals, with destruction of the intervertebral cartilage. There is a slight curvature in the upper part of the dorsal region, formed by the 2nd, 3rd, and 4th dorsals, the convexity being sinistral. A second greater curvature lower down, constituted by the last four dorsal vertebræ, displays a dextral convexity. A third extreme curvature is formed by the diseased second and third lumbar vertebræ, and possesses a sinistral convexity" (Ewart).
No history.
8. Caries of the sixth and seventh cervical, and of the bodies of all the dorsal and upper three lumbar vertebræ. "The upper eight dorsal vertebræ are much affected, and the bodies of the seventh and eighth are destroyed, exposing the dura mater of the cord. It is here that considerable curvature" (posterior, angular) "has taken place" (Ewart). No history. (*Presented by* Professor T. W. Wilson.)
9. A longitudinal section through five dorsal vertebræ, illustrating angular curvature of the spine, "due to the degeneration and interstitial and molecular absorption" (caries) "of the intervertebral cartilage with the greater portion of the body of one vertebra" (Ewart). No history.

10. A portion of the spinal column, exhibiting a double posterior curvature, the result of carious destruction of the vertebræ; one curvature at the upper part of the dorsal region, the other at the dorso-lumbar junction. The bodies of the seventh cervical, all the dorsal, and all the lumbar vertebræ are diseased. The anterior portions of the bodies of the last cervical and first dorsal vertebræ are excavated, and the spine prominent opposite this, the spinous processes and laminae of these vertebræ having coalesced (ankylosed).

The principal curvature, and greatest destruction of bone has taken place in the dorso-lumbar region; the greater portions of the bodies of the seventh dorsal to third lumbar inclusive having been absorbed, their remains carious, porous, and spongy, and an acute posterior angular curvature developed by the approximation of the vertebræ above and below the gap, with bony ankylosis between the laminae and spinous processes of the eighth, ninth, and tenth dorsal vertebræ above, and the first and second lumbar below. Taken from an East Indian lad, aged about 17 years. (See further, "Surgical *Post-mortem* Records," Vol. I, 1875, pp. 139-40.)

11. The whole of the dorsal and lumbar spine, showing caries of all the vertebræ of the former and of the first lumbar. The eleventh dorsal is excavated, leaving a gap an inch wide, in which the spinal cord is exposed, but apparently not injured. The membranes are entire. The ribs on each side of the dorsal vertebræ, for about two inches, are also carious, and their articulations exposed. From a native girl, aged 10 years.
12. Caries of the bodies of the last three dorsal and first three lumbar vertebræ, with ulceration of the corresponding intervertebral cartilages, and a posterior angular curvature in the dorso-lumbar region.
13. "Carious degeneration of two dorsal vertebræ with interstitial absorption of the intervertebral cartilage. Partial reparation by ankylosis has taken place on the right side" (Ewart). No history.
14. "Caries of the bodies of four dorsal vertebræ" (Ewart). Firm ankylosis has taken place between the articular and spinous processes of these vertebræ by means of bridges of newly-formed bone.
15. "Partial ankylosis of five dorsal vertebræ by a deposit of osseous material in, or by ossification of, the anterior common ligament" over the front and right lateral aspects of the spine. No history.
16. "A bony tumour on the left side of the dorsal vertebræ, which pressed upon and obstructed the descending aorta" (Ewart). No history.

Only the osseous shell of the growth is now left, which is the size of a small orange, smooth and rounded.

17. Caries with excavation of the greater portion of the bodies of the first and second lumbar vertebræ. Bony ankylosis, without curvature of the lumbar portion of the spine, has taken place.

18. Necrosis of the upper half of the second lumbar vertebra, with ulceration and partial absorption of the intervertebral fibro-cartilage between it and the first lumbar. A small portion of the necrosed body of the second vertebra may be seen still *in situ*, as well as the exfoliation of the superficial lamina of the body of the first lumbar vertebra.
19. "Caries of a portion of the body of the fourth lumbar vertebra," with ulceration and partial removal of the intervertebral cartilage between it and the third vertebra. (*Presented by Dr. Theodore Cantor.*)
20. "Preparation showing a section of lumbar and three lower dorsal vertebræ in a case of fatal lumbar abscess. The ulcerative destruction of the cancellous osseous structure and the disintegration of the intervertebral cartilage is admirably illustrated" (Ewart).
21. A portion of the spinal column from a case of paraplegia with lumbar pain, &c.—an adult European (male). There is caries of the last dorsal and first lumbar vertebræ, the latter much softened, and breaking down on removal into several pieces. The intervertebral cartilage between these vertebræ had been almost entirely removed by ulceration and absorption, and the opposed bony surfaces of the latter present a roughened and eroded appearance. Indeed, about one half (the upper) of the first lumbar vertebra has quite disappeared. A portion of the cord, corresponding to the seat of the diseased bone, was found "softened and diffluent," accounting for the paraplegia.
22. Caries of the anterior surface and transverse ridges of the sacrum, and anterior aspect of the coccyx, with necrosis and separation of a portion of the left lateral mass, and coalescence of the first and second sacral foramina. The three last vertebræ of the coccyx are ankylosed, and fixed at a right angle to the first by means of strong fibrous bands. During life an abscess surrounded this terminal portion of the spine. (*Presented by Professor Allan Webb.*)
23. "A preparation of the spinal column, showing spina bifida" (Ewart). No history. The hiatus is formed by the absence of the laminae of the sacral vertebræ. The tumour is the size of an orange, intimately adherent to the skin. It is lined by the dura mater of the cord. The latter is seen to divide into two bundles (fasciculi), one of which, the anterior, blends with, and its filaments spread out upon, the inner surface of the cyst; the other, the posterior, traverses the cavity of the cyst at its centre, reaches the posterior surface of the same, and is distributed over it. A tubular prolongation of the pia mater surrounds each of these divisions of the cord.

CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART III.

INJURIES AND DISEASES OF THE
PERICARDIUM, HEART, ARTERIES, AND VEINS.

SERIES VI.

SERIES VI.

INJURIES AND DISEASES OF THE PERICARDIUM, HEART, ARTERIES, AND VEINS.

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1. Acute Pericarditis. "The sac is opened, exposing the anterior surface of the right ventricle and the roots of the great vessels. The greater part of this is covered with shreds and laminae of organizing lymph, some of which are of a pale brown colour." This fibrinous exudation is most abundant near the origins of the aorta and pulmonary artery. "A portion of the parietal pericardium is reflected for the purpose of showing the coating of false membrane with which it is furnished" (Ewart). (*Presented by* Dr. J. C. Collins, of Monghyr.)
2. Acute Pericarditis. A thick, reticulated, and villous-looking layer of soft recent lymph invests the opposing surfaces of the pericardium, and in places unites them. Over the lower portion of the anterior surface of the right ventricle the exudation has assumed a membranous form, is especially thick and dense, and forms bands of adhesion between the parietal and visceral layers. (*Presented by* Professor Monat.)
3. Acute Pericarditis. The exudative material forms a complete membranous investment for the heart, from which, however, it can readily be peeled off. It is comparatively smooth and homogeneous instead of presenting the usual roughened and reticulated appearance. (*Presented by* Professor Edward Goodeve.)
4. Acute Pericarditis. Great thickening of the parietal and visceral layers of the pericardium, with an abundant exudation of lymph between them, which is undergoing organization, and has already served to glue together the opposed surfaces of the inflamed membrane at certain spots. From a native female, Prossonno, aged 35. (*Presented by* Dr. C. R. Francis.)
5. The Heart and Pericardium of a Mahomedan female, aged 15, who died in hospital from acute rheumatism with cardiac complications after an illness of about ten days.

The inflammatory changes found on *post-mortem* examination were most intense. "The heart is enlarged and its walls highly congested, as

is common in acute pericarditis and carditis, and illustrates that condition which has been described as 'inflammatory swelling and stretching,' as distinguished from organic 'hypertrophy and dilation.' The pericardium is highly congested and thickened. There was no fluid in the sac." "There are vegetations, probably of recent origin, deposited along the free margins of the aortic valves. The vegetations are not larger than a pin's head. Others of the same nature, but even smaller, were also found along the lower margins of the bicuspid curtains." (*Presented by* Professor Norman Chevers.)

6. Acute sero-fibrinous Pericarditis. The pericardium is enormously thickened; both parietal and visceral layers are coated with recent lymph, forming a rough and shaggy deposit over the entire cardiac surface, and over the intra-pericardial portions of the large vessels at its base. The pericardial sac was found distended with about twelve ounces of turbid yellowish serum, in which were suspended large flakes of recent lymph.

The specimen was taken from a Hindu female, aged 28, suffering from acute rheumatism, and brought into hospital in a moribund condition. The pericarditis was diagnosed during life.

7. Acute sero-fibrinous Pericarditis. Both parietal and visceral layers of the pericardium are acutely inflamed, and covered with a thick layer of recent, soft, reticulated lymph. Three ounces of turbid serous fluid, with flakes of similar lymph suspended in it, were found effused between the inflamed and opposing layers. Taken from a native male, aged 23, who died in hospital. ("Medical *Post-mortem* Records," Vol. II, 1877, pp. 487-88.)

8. Heart showing the effects of recent acute pericarditis. Both layers of the pericardium are covered by a thick layer of recent rosy lymph, having a rough, granular, and rugose appearance. Six ounces of turbid yellowish serum were also found in the pericardial cavity.

From a native male, aged 42, who died in hospital. ("Medical *Post-mortem* Records," Vol. II, 1878, pp. 687-88.)

9. The Heart and Pericardium from a case of acute sero-fibrinous pericarditis,—a native (Mahomedan) male, aged 40. Both parietal and visceral layers are highly inflamed, and covered by a thick layer of yellowish reticulated lymph, which also glues them together in parts. Fifteen ounces of turbid, greenish-yellow serum, with a large quantity of flocculent lymph suspended in it, were found in the pericardial cavity. ("Medical *Post-mortem* Records," Vol. III, 1880, pp. 535-36.)

10. "Heart, and an enormously distended Pericardium, which contained ninety-two ounces of fluid" (Ewart). Both parietal and visceral layers of the serous membrane have a thickened and softened appearance. No history. (*Presented by* Professor Edward Goodeve.)

11. Suppurative Pericarditis associated with general pyæmia.

The preparation exhibits the heart and pericardium of a prisoner who died in the Rawul Pindie Jail. The sac of the latter was found

filled with pus (pyo-pericardium), and can now be seen with its opposed surfaces roughened and granular-looking from acute inflammatory changes. There was a small abscess in one of the kidneys.

"The man, a Pathan, aged 30, was at first admitted into the jail hospital for a simple ulcer of the ankle, produced by iron fetters. After a time diffuse erysipelatous inflammation of the cellular tissue ensued. Large collections of matter rapidly formed on the inner sides of both thighs and on the chest, the latter communicating with the lung below. This lung (the right) was so firmly adherent at all points that it could not be entirely removed at the *post-mortem* examination. The man lived for about a fortnight after the abscesses on his thighs and chest were opened" (Note by the Donor). (*Presented by J. Fairweather, Esq., M.D., Civil Surgeon, Rawul Pindee.*)

12. Chronic Pericarditis. "An excellent specimen of adhesion of the pericardium. The left ventricle is opened longitudinally. The section, proceeding from without inwards, shows, *first*, a thick, opaque white lamina, corresponding to the external pericardium; *secondly*, two brown-coloured layers, one belonging to the external, the other to the internal pericardium; *thirdly*, an opaque white layer in the situation of the visceral pericardium, and lying in contiguity to the muscular structure of the heart. The right ventricle is also held open, and here a portion of the visceral has been forcibly separated from the parietal pericardium, showing the shaggy character of the torn adventitious structure" (Ewart). (*Presented by Mr. George Daly.*)
13. A section from the heart and pericardium in a case of chronic adhesive pericarditis. "A portion of the sac is preserved. This is a quarter of an inch in thickness and cartilagenous in consistency, roughened and irregular in its interior, and adherent externally to the lungs, portions of which are seen attached" (Ewart). (*Presented by Mr. James Hinder, of Umritsur.*)
14. "Universal adhesion of the parietal to the visceral layer of the serous pericardium, of six or seven years' standing." The ventricular walls are "somewhat attenuated," and their cavities occupied by firm, fibrinous coagula, which are prolonged into the aorta and pulmonary artery on either side. (*Presented by Dr. Green, of Howrah.*)
15. Chronic Adherent Pericarditis. The pericardium is hard, dense, almost horny to the feel. In parts are seen small circumscribed infiltrations of calcareous material into its tissue; this is most abundant in the conjoined layers of the membrane investing the *right* auricle. The muscular structure of the heart is everywhere somewhat thinned and atrophied. (Webb's *Pathologia Indica*, No. 663, p. 16.)
16. Chronic Adhesive Pericarditis, with consequent atrophy of the muscular structure of the heart. The left ventricle is held open by a glass rod. The material agglutinating the pericardial surfaces to each other consists of three alternating layers of white and brown coloured structure. It is

cartilagenous in consistency, and, inclusive of the thickened pericardium, measures about half an inch in thickness, whilst the subjacent wall of the ventricle varies only from one-eighth to one-fourth of an inch in diameter. The *carneæ columnæ*, *chordæ tendineæ*, and curtains of the mitral valve are also much attenuated. The aortic valves are healthy. The right auricle is kept open at a point where a portion of the parietal layer is separated from the visceral lamina. Here the auricular wall is only one-sixteenth of an inch in diameter, whilst the altered and thickened external pericardium is fully thrice as thick" (Ewart).

17. Heart, showing the results of old peri- and endo-carditis. There is a band of firm organized connective tissue uniting the posterior surface of the right ventricle, near its apex, to the parietal pericardium. The endocardium of the whole of the left ventricle is opaque and much thickened. The visceral layer of the pericardium over this ventricle is also considerably thickened, and between them the atrophied muscular tissue of the heart may be seen, the ventricular wall at the apex being reduced to a mere line.
18. Heart of a native male patient, aged 20, who died in hospital from empyema and peri-hepatic abscess, &c. There are extensive and intimate adhesions between the parietal and visceral layers of the pericardium, especially on the posterior aspects of both ventricles, where the organ was firmly bound down to the diaphragm.
19. Preparation intended to illustrate the earlier effects of adhesive pericarditis upon the heart. This organ is seen invested by a very thick leathery pericardium, the visceral and parietal layers having almost uniformly united, and the pericardial cavity thereby become obliterated. The muscular wall of the left ventricle is hypertrophied from the consequent impeded heart's action. There is no valvular disease.

From a native male patient, aged about 30, who died from pneumonia.

20. Chronic sero-fibrinous Pericarditis. The heart and pericardium are shown in their relative position, the sac of the latter being opened by a vertical incision anteriorly. The pericardium is seen to be enormously thickened and dilated. Its structure is quite leathery in consistency. There is an abundant and extensive deposit of organizing fibrinous exudation covering the heart, and at parts serving to unite the parietal and visceral layers of the pericardium, so as to sub-divide its cavity into loculi of varying sizes. These were found occupied by an enormous quantity of turbid, opaque, sero-puriform fluid. The heart itself is hypertrophied, and, together with the distended pericardium, constituted a tumour as large as a melon, which materially filled the mediastina, the lungs being pushed back to the posterior and outer sides of the thorax, particularly the left lung. Taken from a West Indian seaman, aged 28, who died in hospital.
21. "Heart of a Sonthali prisoner in the Hazaribagh Jail, who died of anæmia following bowel disease. The man was a 'kheti' at home, and a gardener in the jail, and therefore not exposed to

any of the causes which are said in soldiers to conduce to the formation of the so-called 'soldier's spot' on the heart. 'There is a distinct spot, about two-thirds of an inch long by a third of an inch broad, on the front of the right ventricle, about an inch below the origin of the pulmonary artery, and half an inch below and to the left of the base of the ventricle. It is freely movable on the surface of the heart' (Colles). The patch is abruptly defined, and can readily be stripped off the surface of the visceral pericardium. (*Presented by Dr. J. M. Coates, Hazaribagh.*)

22. The heart of a Burmese, who died in hospital, showing a "white patch" on its anterior aspect—the so-called soldier's "heart spot." The patch is irregularly rounded, rather larger than a rupee, and consists of a circumscribed thickening of the visceral pericardium covering the anterior surface of the right ventricle.
23. Heart, with a circumscribed "white patch" ("attrition mark") of pericardial thickening on the anterior surface of the right ventricle. It is about the size of a rupee, and surrounded by a delicate zone of capillary vessels (in the recent state). It shades off gradually into the surrounding pericardium, and cannot be stripped without injury to that membrane. Taken from a native male, aged 30, who died from empyema of the left side of the thorax. The heart was displaced to the right very considerably. The right ventricle and auricle are much dilated.
24. Heart, showing a large "white patch" covering the greater part of the anterior surface of the right ventricle. It can be peeled off with the forceps without injury to the subjacent visceral pericardium. The right cavities of the heart are dilated. From a European male (E. H.), aged 48, who died from apoplexy. ("Medical *Post-mortem* Records," Vol. II, 1877, pp. 465-66.)
25. "Heart of a native, pierced in three places with wounds, caused by fractured sternum and ribs. The patient was run over by the wheel of a buggy, and he died within a quarter of an hour after the accident. On examination, sixteen hours after death, there were no external signs of injury to the body. On removing the integument of the thorax anteriorly, it was discovered that the sternum was fractured at its centre transversely, and the third and fourth ribs were broken into several pieces, with their spicula pushed downwards; and, on lifting the cartilages of the ribs with the sternum, a large quantity of dark coagulated blood was observed immediately under the site of the accident. The pericardium was lacerated in three points, and also the left ventricle of the heart, even extending in one place right through the septum ventriculorum, the wounds being filled with coagulated blood. The left lung was extremely congested, approaching a dark colour. The right lung presented nothing worthy of note, except that it was of a red colour at its lower portion, which might have been dependent on gravity." (Allan Webb, *Pathologia Indica*, No. 1579, p. li.) All the wounds are punctured in character.

That on the anterior aspect of the heart seems to have been caused by the fractured end of a rib perforating the left ventricle, passing through the septum, near the base of the heart, and emerging at the larger jagged opening to the right of the septum, wounding to a slight extent the right ventricle. The direction of this lacerated wound is at right angles to the long axis of the heart. The other wound is at the outer aspect of the left ventricle (left border of the heart), is nearly half an inch in length, has smooth edges, and is directed upwards and inwards, completely perforating the ventricular wall.

26. "Heart, showing two ruptures of the right ventricle. One is situated near the apex, below the 'moderator band of King;' the other, which is much larger, is close to the inferior or right margin of the heart, and is only separated from the auriculo-ventricular opening by the right flap of the tricuspid valve. The muscular fibre of the heart was healthy, with well-marked striæ. (The right ventricle has been laid open by an incision through its anterior wall.) The patient, a native labourer, aged 24, was thrown by a locomotive engine, and his body violently doubled-up by the fire-box of the engine as it passed over him. He was killed at once. Besides the rupture of the heart, there was extensive laceration of the liver, and compound fracture of one thigh" (Colles). (*See also Indian Medical Gazette*, Vol. II, p. 45.—*Presented by* Assistant Surgeon B. W. Switzer, F.R.C.S.I., 12th Bengal Cavalry, Cawnpore.)

27. Ruptured Heart. This specimen was received with a note to the effect that the man, a coolie, "died suddenly and almost immediately after a bale of cotton had fallen on the pit of his stomach, both pericardium and heart being found ruptured on *post-mortem* examination."

The heart exhibits three rents, all in the right ventricle. One runs down the anterior aspect of the ventricle all along the septum, is two and a half inches long and half an inch wide; the second occupies the space immediately to the right of the apex of this ventricle, the rupture, commencing about one inch above the outer and lower border of the ventricle, curves round it, and extends for half an inch on its posterior aspect. The third is an angular rent, situated close to the base of the ventricle, its horizontal portion being parallel to the right auriculo-ventricular orifice, its vertical portion to the outer border of the ventricle. It measures about one inch in each direction. All these ruptures have irregular jagged edges. The heart itself is somewhat small, covered externally by an unusual amount of fat, but the muscular structure proves on microscopic examination to be healthy. (*Presented by* Sub-Assistant Surgeon Gopal Chunder Roy, Howrah.)

28. Heart, showing extensive rupture of the septum ventriculorum. There is situated, about midway between the apex and base of the heart, a ragged rent, through which three fingers can be passed, running somewhat obliquely in a direction from above and in front, downwards and backwards. On the left ventricular aspect the

edges of the rent are comparatively clean, whereas in the right ventricle they present a very ragged and torn condition, and extend into the muscular tissue for at least an inch above and below the actual perforation. Both parietal and visceral layers of the pericardium over the anterior aspect of the heart, corresponding to the position of the rent in the septum, exhibited a dark purplish colour, and the cellular tissue just beneath the visceral layer was ecchymosed. The pericardial cavity contained a small amount of sanguineous serum. The right lobe of the liver (upper margin) was also found ruptured. There was intense congestion of both lungs, as also very considerable ecchymosis, and some blood extravasation into the loose cellular tissue of the anterior mediastinum. Neither the sternum nor any of the ribs were fractured.

Taken from a native male, aged 30, who died in hospital thirteen hours after admission. He was run over by a carriage, two wheels of which passed over his chest in an oblique direction from left to right, and was, moreover, trodden upon by the horse.

29. The heart of a native boy, aged 5 years, showing extensive rupture. "It is said that the boy was either run over by a 'hackery,' or trampled by one of the bullocks, and died instantaneously. There was no mark of violence visible externally except two ecchymosed spots—one about the size of a two-anna piece, situated under the skin in the cellular tissue over the top of the sternum, and the other about the size of an almond, under the scalp, over the right parietal eminence. The anterior surface of the upper lobe of the right lung was ecchymosed. The pericardium was found filled with clotted blood, and the left ventricle of the heart ruptured from top to bottom. There was no other injury. None of the ribs were fractured or injured in any way."

The rupture is completely through the anterior wall of the left ventricle, parallel and in close approximation to the septum ventriculorum, in fact, along the anterior inter-ventricular groove, extending from the base of the heart, between the root of the aorta and left appendix auriculæ, to the apex, its direction being a little oblique, from left to right and from above downwards. Corresponding to this complete rupture of the anterior wall, the posterior wall of this ventricle has also given way, the visceral pericardium alone holding together the lacerated parietics in this situation. (*Presented by Dr. Gordon Price, Civil Surgeon, Jessore.*)

30. "Heart, with extensive rupture, involving both auricles, the right ventricle, and the root of the aorta. The patient, a Hindu "khalasi," aged 30, was jammed between two buffers by an engine, which came up slowly while he was chaining wagons together. He fell dead on the engine backing. The only injuries sustained, besides that of the heart, were rupture of the pericardium and fracture of the eighth and ninth left ribs. The rupture commences behind, between the auricles, it then winds round the root of the aorta (in which there is a minute lacerated opening) to the infundibulum of the pulmonary artery, and obliquely downwards

and to the right side, through the anterior wall of the right ventricle, as far as the "moderator band of King." Thence it runs transversely to the right, as far as the lower margin of the heart, whence it turns upwards towards the posterior wall of the right auricle, on which it gradually ceases; the pericardium and part of the muscular fibre remaining entire in this part of the rupture, and forming a sort of hinge, by which the large flap, composed of the greater part of the right auricle and the front of the right ventricle, is attached to the rest of the heart. There is another laceration, about a quarter of an inch long, in the front wall of the right ventricle, between the great rupture and the septum, which does not involve the pericardium. It is marked by a blue glass rod. The muscular fibre of the heart was not fatty" (Colles). (*Presented by Dr. J. MacLeod Cameron, Civil Surgeon, Monghyr.*)

31. "Spontaneous rupture of the wall of the right ventricle at the apex, in a native. The heart is very much altered in its external appearance. The right auricle is exceedingly dilated. The auriculo-ventricular opening is very large. There appears to be no proper right ventricle, but this is compensated for by enormous dilatation of the pulmonary meatus, which admits four fingers, and has burst in its most dilated portion. This was caused by an aneurismal formation in the apex of the left ventricle, about the size of a small fowl's egg, which has encroached upon the capacity of the right ventricle." (Allan Webb, *Pathologia Indica*, No. 1660, p. liv.) "The man was admitted into hospital on the 10th November 1847 with slight fever, from which he was quite free on the 11th. After being discovered on the morning of the 13th in a state of nearly complete collapse, he emerged with scarcely any signs of vitality, but lived for nearly 12 hours. The rupture was nearly longitudinal. The opening at first, when the rupture was examined, was exceedingly minute internally, but was externally about eleven lines in length, and the valve-like opening was partially closed with clots of blood. There was about a pint of blood in the pericardium, of dark colour, and only slightly coagulated. There were about two pints of blood in the posterior mediastinum." (Memorandum by Dr. Ross.)

On examining the right ventricle carefully, it is seen that the septum just below the pulmonary orifice has undergone partial dilatation, so as to form another aneurismal pouch, which projects into the left ventricle, just above the upper margin of the similar dilatation in this ventricle described by Dr Webb. This projection can be readily seen in the way the preparation has now been put up. (*Presented by Dr. Ross of Jessore.*)

32. "Rupture of the right ventricle of the heart of a native. The whole organ is of a lemon-yellow colour, and in an advanced stage of fatty degeneration. At the point where the wall has given way, the whole of the muscular tissue is replaced by fat. The opening is jagged, close to the base of the heart and septum, and measures about an inch in length, this being in the direc-

tion of the long axis of the ventricle " (Ewart). (*Presented by Dr. Mountjoy.*)

33. A very remarkable specimen, showing the lodgment of a rounded leaden bullet in the muscular substance of the left ventricle of the heart of a soldier, who lived for seventy-two days after the receipt of the injury.

History:—"Private Israel Hinton, of Her Majesty's 80th Regiment, was wounded in the storming of the Great Pagoda at Rangoon, on the 14th of April 1852. He was treated in the field hospital by Dr. Fayer for upwards of a fortnight, and when apparently convalescing, transferred to the dépôt hospital at the Amherst Sanitarium." He was here received under the care of Dr. White, who reports—"The ball had entered about the top of the right shoulder, taking an oblique direction towards the cavity of the chest. Blood and air issued from the wound for several days afterwards. His breathing was difficult, and accompanied by a short distressing cough and sanguineous expectoration. There was tumefaction of the left side of the chest." * * * These symptoms had in a great measure subsided on the admission of the patient under the care of Dr. White. The cough was then slight, and there was no blood in the material expectorated. "There was some emaciation, small and quick pulse, and clean tongue. The skin was cool, bowels regular, wound looking healthy, spirits good, patient expressing every confidence as to his ultimate recovery. There was dullness over the left side, slight respiratory murmur only underneath the clavicle. The wound was closed on the 12th of May. Febrile symptoms then came on every evening. On the 13th he stated that he had passed a most restless night, owing to fearful dyspnœa and coughing, which were relieved after he had brought up some bloody muco-purulent expectoration. The recurrences of similar distressing paroxysms prevailed till the 16th, when his dyspnœa was constant, and he consequently spent very sleepless and wretched nights. He remained in this state till the 24th, after which he enjoyed comparative ease and respite till the 3rd of June, when the dyspnœa and bloody expectoration returned with aggravated force. On the 11th emphysema reappeared in the situation of the original wound, extending into the axilla and down the left side of the chest. This was reduced by pressure, but immediately returned on the withdrawal of the same. He was now greatly depressed in spirits, pulse small, gradually sinking. On the 14th he experienced profuse perspiration, and no respiratory murmur could anywhere be heard in the left side. On the 16th he suffered from hiccup, was emaciated to a skeleton, and expectorated purulent matter, untinged with blood. On the 20th he was manifestly worse. He died on the 24th, having survived 72 days after the reception of the ball in his chest.

Post-mortem examination six hours after death. The body was pale and frightfully emaciated. The passage of the ball through the pectoral muscle could not be observed; but it seemed to have passed into the thorax between the third and fourth ribs,

proceeding in its course downwards and inwards. The pleura was firmly adherent to the left side, forming a cavity which extended from the first to the seventh ribs, and from the spinal column to the cartilages of the ribs. This contained about a pint of pus. The left lung was impervious to air throughout. A small portion of the cloth of the jacket was lying loosely at the orifice of a canal situated about the middle of the lung in its convex aspect. This canal, passing forwards and inwards, stopped short close to the union of the pulmonary veins, when all further traces of the passage of the ball were lost. On raising the heart, however, a hard and firmly impacted substance was felt at its apex, which, on examination, proved to be the ball in the left ventricle, at its most inferior part, crossed and re-crossed by the chordæ tendineæ and carneæ columnæ, which secured it firmly in its position. The heart was perfect in every respect, and the only conclusion that could be arrived at was that the ball must have perforated one of the left pulmonary veins, and thus passed into the left auricle, and ultimately into the left ventricle." (Indian Annals of Medical Science, Vol. I, p. 294.)

NOTE.—The pulmonary veins have been cut away in the preparation, and it is not recorded whether any wound in them was discovered. The suggestion seems, however, to be very improbable; for, first, any wound of a vessel like a pulmonary vein must of necessity have been immediately or very quickly fatal from hæmorrhage; secondly, the mitral flaps and their appendages (chordæ tendineæ, &c.), which one would expect to have been injured by the passage of the bullet through the left auriculo-ventricular opening, are quite healthy-looking and normal; thirdly, there is evidence of slight laceration of the muscular tissue around the imbedded bullet on the *inner* aspect of the left ventricle, which is not consistent with the view that it merely *dropped* into this position. On the other hand, no trace of any wound, cicatrix, or any other indication of injury to the muscular tissue on the external aspect of the heart can be found, though very carefully searched for, and with the aid of microscopical examination of the adherent visceral pericardium and muscular fibre; but then the heart has been laid open *post-mortem* in various directions, and thus any trace of such a lesion may have been destroyed, or at any rate rendered unrecognizable at this long period after the date of the injury; while it is also to be remembered that the patient having survived for 72 days, there was afforded ample time for the repair of any injury to the muscular substance of the heart. So that, on the whole, I consider the probabilities are much more in favour of the bullet having completely perforated the muscular wall of the ventricle, and lodged *in situ*, than as suggested in the text (J. F. P. McC.). (*Presented by* Dr. P. W. White, of the Dépôt Hospital, Amherst.)

34. "Inflammation of the substance of the heart. There are two dark patches, indicating the site of inflammation and approaching disintegration of the muscular tissue." One of these is situated on the anterior aspect of the heart, near the centre, and reaches into the septum; the other is a little higher up and to the left, involving the muscular structure of the anterior wall of the left ventricle. No history. (Webb's *Pathologia Indica*, No. 789.)
35. Heart, small and shrunken, with thin, soft, and pale walls, and in the right ventricle, on the septum and near the root of the pulmonary artery, exhibiting two or three small, raised, soft

nodules, beneath the endocardium. The general muscular tissue is highly fatty. The fasciculi, under the microscope, are seen atrophied, brittle, devoid of transverse striæ (to great extent), and freely dotted with dark granules of fat. The nodules have a different structure. They are composed of small nuclei, with the remains of blood-corpuscles, and very delicate fibrillating tissue; appear therefore, to be the result of chronic inflammatory changes. The muscular tissue beneath and around the nodules is highly fatty and degenerate. The largest nodule is the size of a small pea, the others like barley-grains. No history. (*Presented by Professor Chuckerbutty*)

36. Acute ulcerative peri- and myo-carditis. Both layers of the pericardium are highly injected, vascular, and ecchymosed. A layer of yellowish lymph is seen between their opposed surfaces on the anterior surface of the heart. The visceral pericardium near the apex of the left ventricle, for a space about the size of a rupee, is ulcerated, this condition extending to the subjacent muscular tissue, which is soft, shreddy, and eroded.

From a case of pyæmia and tetanus (a native male, aged 60), following a lacerated wound of the foot. (*See further "Surgical Post-mortem Records," Vol. I, 1879, pp. 643-44.*)

37. Heart, showing (1) acute pericarditis, sero-sanguineous in character; (2) acute endocarditis (valvular), the affected (aortic) valves covered with recent vegetations; and (3) ulcerative myo-carditis.

The parietal pericardium has been removed. The visceral layer exhibits great vascularity and ecchymosis, and was invested, in the recent state, by a layer of granular lymph, spread uniformly over the cardiac surface. Six ounces of dark sanguineous serum were also found in the pericardial cavity. The right and left coronary valves bear large fibrinous vegetations on their ventricular aspects, the left flap being further perforated in two situations, leaving only a thin bridge of valve-tissue between the apertures, through which a crow-quill would pass easily. The portion of the endocardial surface situated below these valves—between them and the left auricle, and immediately above the anterior flap of the mitral—is acutely inflamed and ulcerated over a space nearly as large as a rupee. The ulcerative process extends so deeply as to have almost produced perforation of the auricular wall in this direction. The left ventricle is dilated; the mitral orifice widened, but its valves healthy.

From a Mahomedan (male), aged 26, who died in hospital. (*"Medical Post-mortem Records," Vol. III, 1880, pp. 445-46.*)

38. "Heart covered within and without by small-pox-looking pustules, probably of pyæmic origin, which are also abundantly developed upon the aorta and pulmonary artery within and without. The right auricle shows scarcely any pustules, excepting one or two large ones upon the appendix auriculæ. The outside of the right ventricle is free, excepting the meatus pulmonalis, upon which they are so numerous as to have become confluent upon the tricuspid valve, where it is joined to the meatus.

* * * * * The left auricle is free from pustules both within and without. The left ventricle is very much dilated and covered with pustules *anteriorly*, but none corresponding are seen upon the endocardium. On the contrary, the *posterior wall* of the ventricle is entirely free, externally upon the pericardium, whilst internally the endocardium is loaded with them. The aorta has a large oval opening in one of its semilunar valves, most probably from the separation of a pustule, and a large irregular opening leads from it to a small aneurism, which would contain a hazelnut, extending between the auricle and ventricle on the left side. The aorta interiorly presents marks as of cicatrices from pustules" Allan Webb. (Vide *Pathologia Indica*, No. 1523, p. lii.) No history.

The left ventricle has been opened from behind; the dilatation of its cavity is well seen, as also the perforation of the right semilunar valve. The little aneurism described appears to be a dilatation of one of the sinuses of Valsalva. It lies between the aorta and pulmonary artery in the right auriculo-ventricular groove. It has been filled with a little cotton wool, and the sac may be seen laid open on the external aspect of the heart,—the sides separated by a glass rod. The coronary arteries are not involved in this aneurismal dilatation of the aorta.

39. The heart of a native male (Hindu), aged 36, who died from arsenical poisoning, showing large patches of dark-purplish blood extravasation beneath the endocardium of the left ventricle, and principally at the upper part of the septum ventriculorum. (*Presented by Dr. R. Harvey, Civil Surgeon, 24-Pergunnahs, Alipore.*)

40. The heart from a case of arsenical poisoning,—a native female, aged 20,—exhibiting considerable sub-endocardial ecchymosis of the left ventricle. The septum ventriculorum is chiefly affected, and presents small patches of a deep-red or port-wine colour. The muscular tissue here is not merely stained, but, in the fresh state, fluid blood escaped on incising the patches. There are similar, but smaller and less intense extravasations beneath the endocardium of the right ventricle, also most marked at the upper part of the septum.

Examined microscopically, the transverse striation of the muscular fibre is found normal, or but slightly indistinct in parts as compared with healthy muscle. Free blood-corpuscles, both coloured and pale, are observed in abundance, extravasated amidst the fasciculi, and there is a remarkable multiplication of the connective tissue nuclei of the sarcolemma, as if indicative of commencing irritative changes in the muscular fibre itself, *i.e.* not merely a localized passive blood-extravasation.

41. "Extreme atrophy of the heart of a native. The walls and valves are equally wasted and attenuated to such an extent that the organ is scarcely half the average size" (Ewart). (*Presented by Dr. F. Oxley, of Singapore.*)

42. Atrophy of the entire heart of a Bengali woman, "who died from fever." (*Presented by Professor Allan Webb.*)

43. "Atrophy of the heart. The parieties of the organ are of a pale yellow colour. Both ventricles are opened, exposing attenuated *musculi papillares*, *chordæ tendineæ*, and curtains of mitral and tricuspid valves". (Ewart). (*Presented by Dr. Eatwell, of Pubna.*)
44. Atrophy of the heart in connection with tubercular phthisis of both lungs. From an adult Hindu woman. "The heart weighs only three and a half ounces; its cavities are diminished, and the wall of the right ventricle greatly thinned. Valves healthy" (Colles).
45. A small atrophied heart, weighing only $3\frac{3}{4}$ ounces. Its walls are thin, pale, and soft.
From a native female, aged 38, who died from chronic dysentery, and in a state of great emaciation. ("Medical *Post-mortem* Records," Vol. II, 1878, pp. 715-16.)
46. "Hypertrophy of the left ventricular walls, consequent upon obstructive atheromatous thickening of the aortic valves and coats of the aorta" (Ewart).
Towards the apex of the ventricle the muscular tissue is from one-and-a-half to two inches in thickness.
47. Hypertrophy of the left ventricle without commensurate dilatation. No history. (*Presented by Mr. P. Minas.*)
48. Enormous hypertrophy, with but slight dilatation of the heart, associated with atheromatous disease of the coronary valves and aorta. The walls of the latter are rigid and thickened from calcareous changes, and the ascending portion of the arch is fusiformly dilated. (*Presented by Dr. J. Macpherson.*)
49. "A hypertrophied heart. The cavity of the left ventricle is exposed. The parieties measure fully an inch in thickness. The muscular structure is firm and compact. The aortic valves are agglutinated together and thickened, leaving an elliptical opening, held open by a red glass rod. The valves were, in great measure, competent to prevent much regurgitation during the diastole; but their partial union by organized material rendered their accurate apposition to the walls of the aorta during the systole an impossibility, thus opposing an inseparable obstacle to the transmission of the blood from the ventricle into the aorta. Hence the compensatory hypertrophy of the muscular structures of the left ventricle without dilatation" (Ewart).
50. "Heart of D. N. Robinson, who died in the Medical College Hospital on the 5th of April 1864. The left ventricle is considerably hypertrophied. There is no valvular disease, but much atheromatous degeneration of the arteries was discovered. * * There was found an old apoplectic clot near the surface of the posterior part of the right hemisphere. A sac filled with greenish-coloured fluid—the remains of an apoplectic effusion—also existed in the right corpus striatum. The arteries of the circle of Willis were thickened and atheromatous, as also the coronary arteries, which have been laid open" (Ewart). (*Presented by Professor Norman Chevers.*)

51. A preparation illustrating the relation between granular degeneration of the kidneys (chronic Morbus Brightii) and hypertrophy of the heart. The hypertrophy affects chiefly the left ventricle, the muscular wall of which, near the base, is quite an inch and a half in thickness. The kidneys are contracted, granular at the surface, and here also exhibiting numerous small serous cysts. The aortic valves and lining membrane of the aorta are highly atheromatous. The abdominal and iliac vessels and the cerebral arteries were all found similarly diseased. "The patient, aged 56, was admitted into hospital with a small carbuncle on the nape of his neck."
52. Simple hypertrophy of the heart, the valves being healthy. The muscular wall of the left ventricle measures fully an inch near the base. This hypertrophy was associated with granular degeneration of the kidneys.
The visceral pericardium is slightly thickened, and shows the remains of recent inflammatory deposit (lymph), in the form of shaggy brownish patches. A few drachms of turbid serum were found in the pericardial cavity.
The patient, a Hindu, aged 48, was admitted into the hospital for acute pericarditis. He died from sudden syncope the day after admission.
53. Heart showing great hypertrophy of the left ventricle, not associated with valvular lesions, but with extremely small, granular, and contracted kidneys, and illustrative therefore of the connection which so commonly exists between these diseases.
54. Hypertrophy of the left ventricle of the heart, from a patient who died in hospital suddenly from serous apoplexy (effusion into the ventricles of the brain). The kidneys were small, granular, and hard.
55. Heart showing great hypertrophy without any valvular or aortic disease. The left ventricle is chiefly affected. Its walls measure from an inch to an inch and a half in thickness, and the whole heart weighed 12 ounces. The kidneys were highly granular. The vessels forming the circle of Willis were atheromatous, and a small aneurismal tumour (about the size of a pea) was found developed in connection with the anterior communicating artery. The brain was soft and œdematous, the lateral and third ventricles filled with serum, and much serous effusion also into the meshes of the pia mater. From a native female, a prostitute, aged about 35, who died from chronic Morbus Brightii. ("Medical *Post-mortem* Records," Vol. I, 1875, pp. 943-44.)
56. Preparation intended to illustrate the association of chronic Bright's disease of the kidneys with hypertrophy of the heart. The kidneys are seen to be typically granular, contracted, and atrophied (interstitial nephritis), each weighing only one and three-fourths of an ounce. The hypertrophy affects chiefly the left ventricle of the heart, the walls of which are much thickened, and its cavity somewhat dilated. This organ weighs 16 ounces.
57. Great hypertrophy of the heart with corresponding dilatation of its cavities, particularly of the left ventricle. The aortic valves

and ventricular flap of the mitral are greatly thickened and covered with "vegetations." No history.

58. Hypertrophy with dilatation of the left ventricle. The aortic valves show considerable thickening, opacity, and puckering from atheromatous changes, which also involve the ascending portion of the aorta. (*Presented by Dr Cantor*)
59. Enormous hypertrophy, with dilatation of the heart, from a case of Morbus Brightii. (*Presented by Professor Chuekerbutty.*)
60. Great hypertrophy with dilatation of the heart, affecting chiefly the left ventricle. The organ weighed 16 ounces. The aortic valves are diseased, thickened, crumpled, their free margins rounded and opaque. They are altogether incompetent. The whole of the ascending portion of the arch of the aorta shows marked atheromatous thickening. The endocardium of the left ventricle, between the coronary and mitral valves, is rough, opaque, and over a patch the size of a sixpence, superficially pitted as if from ulceration. The flaps of the mitral, especially at their attachments to the chordæ tendineæ, are also abnormally opaque and thickened. The muscular wall of the left ventricle, near the base, measures fully an inch in diameter. Taken from a Mahomedan named Wazzeer. "On admission into hospital, a double bruit was found masking both the cardiac sounds." (*Presented by Professor C. R. Francis.*)
61. "Heart, showing enormous dilatation, with hypertrophy of the left ventricle, calcareous vegetations of the three aortic (sigmoid) valves, and of the posterior flap of the mitral valve. All the affected parts are shrivelled and puckered up to about half their normal size, and are covered with hard, gritty, wart-like masses, one of which is seen in section in the diseased portion of the aortic opening. The "septum of Leutand" is healthy, but the adjoining part of the opposite (posterior) flap of the mitral valve contains a mass of calcareous deposit, the size of a pistachio-nut, besides numbers of the warty vegetations before mentioned. There is dilatation of the root of the aorta. The pericardium is firmly adherent to the anterior wall and apex of the heart. A portion of it has been detached and held apart by black glass rods. The heart, when emptied of clots, weighed 2lbs. 3ozs. From the body of Henry Jackson. Disease was of eight years' standing, and of rheumatic origin" (Colles). (*Presented by Assistant Surgeon A. Vans Best, Presidency General Hospital.*)
62. The heart of a European patient, aged 35, who died in the Presidency General Hospital from angina pectoris. The left ventricle is dilated, and its walls very much hypertrophied. The aortic valves are slightly thickened. The openings of the coronary arteries are preternaturally high placed; each orifice is seen very much contracted, the calibre of the vessels dilating beyond, but no appearance of any degenerative change observed in them. The ascending portion of the arch presents several circumscribed spots of atheromatous deposit. The largest of these oblong in shape, about an inch in length and half an inch

in breadth, is situated at the root of the arch, immediately above the conjoined insertion of the right and middle coronary valves. The left auriculo-ventricular opening is wide and expanded; the chordæ tendineæ stretched and thickened; the papillary muscles very much hypertrophied. The right side of the heart shows corresponding hypertrophy with dilatation. (*Presented by Dr. W. J. Palmer.*)

63. Heart showing extensive hypertrophy with dilatation. There is stenosis of both mitral and aortic orifices. The former barely admitted the tip of the little finger, and the latter is reduced to a mere slit. Both the coronary and mitral valves are greatly thickened, contracted, and rigid from calcareous deposit. The middle aortic flap is ulcerated and fissured on its ventricular surface. The pericardium is seen universally adherent. The muscular structure exhibits, on microscopic examination, widespread, fatty metamorphosis.

Taken from a native male patient, aged 27. The heart's action was excited; there were systolic murmurs,—one sharp and distinct at the apex, the other at base and midsternum, and also at the right and left second cartilages. There was a history of rheumatism during childhood.

64. A heart, weighing 26 ounces, and exhibiting enormous dilatation, with hypertrophy of the left ventricle, the result of disease of the aorta and aortic valves. The morbid condition of the latter is very marked. The segments are crumpled, their edges rounded, irregular, and thickened; the right and middle flaps have partially coalesced; and altogether the change is such as must have produced, during life, considerable incompetency, the altered valves being quite insufficient to close the aortic orifice, and yet, at the same time, narrowing it. The lining membrane of the aorta throughout the arch was thickened and atheromatous, here and there slightly calcareous; the ascending portion (*see preparation*) dilated. The mitral valves are much stretched, but not otherwise diseased. The left auriculo-ventricular opening admits five fingers, the left auricle is dilated, and so also are the cavities on the right side, but to a much less extent as compared with the left. The left ventricle was found quite uncontracted. Its walls measure fully an inch in thickness. Both coronary arteries arise together in the sinus of Valsalva behind the middle coronary valve; their orifices are much contracted from the atheromatous condition of the aortic lining membrane. Taken from a Malay, a seaman, aged 35, who died in hospital.

65. Enormous dilatation of both left and right cavities of the heart, with disproportionate hypertrophy of the muscular structure. The organ is three to four times its normal size. No history. (*Presented by Mr. Hannah.*)

66. Great dilatation of the left ventricle without corresponding hypertrophy. The columnæ carneæ are dissected out so as to form wide meshes: the whole of the endocardium abnormally thick and opaque. The aortic valves show chronic inflammatory changes, are greatly thickened and rounded off at their free

margins, much contracted and shortened, and must have been very "incompetent." The mitral flaps are also diseased. No history.

67. General dilatation of the heart without hypertrophy, in fact, the muscular structure is atrophied. The muscular columns in the interior of the left ventricle (exposed) are seen to be wasted. The aortic valves are greatly diseased, and no doubt this was the primary cause of this morbid condition. The valves are much thickened and opaque, the two anterior flaps coherent, so that, viewed from below, the aortic orifice seems to be guarded by two valves only, and is reduced to a mere chink, half an inch in length and a few lines wide. The "obstruction" thus produced must have been very great, and although at first leading probably to hypertrophy, has ended in dilatation of the left ventricle and auricle. The right cavities are also dilated. "Taken from a native, whose liver, lungs, and brain manifested apoplectic effusions of blood." (Webb's *Pathologia Indica*, No. 1422, p. lii.)
68. The heart of an East Indian patient (male), aged 27, "who died in hospital from hæmoptysis (pulmonary apoplexy)." The organ is large, the left ventricle dilated. Both aortic and mitral valves are diseased. The former are thickened, partially conjoined, and the central and right flaps are, in addition, ulcerated. The mitral orifice is much constricted, both laminae of the mitral thickened and opaque, as also are their chordæ tendineæ. The auricular aspect of the mitral ring (orifice) is at one point calcified. The left auricle is dilated, its endocardium throughout thickened, and so also is the lining membrane of the left ventricle, especially that portion just beneath the aortic orifice, where it forms two or three valve-like folds.
69. The heart (with its pericardium reflected) of a confirmed opium-eater, a native female, aged 60, showing great dilatation of the ventricular cavities, stretching and thinning of the valves, atrophy of the muscular walls, and diffuse molecular fatty degeneration of the muscular fasciculi, as exhibited on microscopic examination.
70. The heart of a native woman, aged 35, admitted with general dropsy. The specimen shows (1) general dilatation of the right side of the heart, and of the left auricle; (2) thickening, hardening, and button-hole-like contraction of the mitral valves, so that they form a transverse slit which scarcely admits the tip of the little finger. The chordæ tendineæ are much fore-shortened, in fact, have almost disappeared, the apices of the papillary muscles being brought into direct contact with the rigid margins of the valve. The aortic valves are also slightly thickened.
71. Heart showing immense dilatation of the left ventricle, with some (but not much) hypertrophy of the muscular walls. The endocardium has throughout an opaque, thickened appearance, and the aortic and mitral valves present similar changes. Immediately above the coronary arteries the lining membrane

of the aorta exhibits an irregular-shaped, but distinctly marked, slightly raised patch of thickening, which, in the fresh condition, was highly vascular and ecchymosed. This patch of inflammation (acute endo-arteritis) was apparently of recent origin. The pericardial sac contained about four ounces of straw-coloured serum. The parietal and visceral layers were both abnormally vascular, and spots of sub-pericardial ecchymosis were observed on the posterior aspect of the left ventricle, near the inter-ventricular groove. The specimen was taken from John Fernandez, a Portuguese seaman, aged 29 years. In the late cyclone in the Bay of Bengal (1872), his ship foundered off Madras, but he managed to save himself by clinging on to a hencoop. He continued to float about, thus supported, for five days and nights (from the 3rd to the 8th May) without any food or fresh water. On the 8th May he was picked up by a steamer, and landed in Calcutta on the 13th. He now began to experience severe pain in the chest, and, this becoming daily aggravated, applied at the hospital, and was admitted on the 18th May. His condition on admission was as follows: Complains of severe pain at the epigastric notch. Is much depressed. Has a short, dry cough, and the breathing is hurried. The legs and feet are œdematous. Pulse rapid, soft, compressible, 120. The area of cardiac dulness is found increased, and the heart's sounds distant. A systolic bruit is distinctly heard at the apex and mid-sternum, disappearing towards the axilla and aortic cartilage. There is also dulness with pneumonic crepitation at the base of the right lung. He died unrelieved the following day.

- 72.** Heart showing great dilatation with some hypertrophy of the right ventricle. The valves on both sides of the heart are healthy. The aorta was highly atheromatous,—a portion is preserved with the specimen. Taken from a patient who had for several years suffered from chronic bronchitis with pulmonary emphysema.
- 73.** Dilatation of the right auricle and ventricle of the heart, with slight hypertrophy of the muscular wall of the latter. The auriculo-ventricular opening admits four fingers. The tricuspid valves are stretched.

From a native male, aged 50, who died from chronic bronchitis with much emphysema of both lungs.

- 74.** Heart showing great hypertrophy of the left ventricle, and a dilated condition of the right chambers. The aortic and mitral valves and the lining membrane of the left ventricle are abnormally opaque, slightly thickened, and the coronary valves insufficient. The aorta is markedly atheromatous, this condition extending throughout the thoracic and abdominal aorta, and into the common iliaes. The right side of the heart is exposed. The tricuspid and pulmonary valves are normal, the latter perhaps a little thinned and stretched, and the pulmonary orifice slightly dilated. The foramen ovale (*see* preparation) is patent, or rather, there appears to be a perforation or imperfect closure of this orifice,—a rounded opening which admits the tip of the little finger, existing at the upper part of the membrane which

usually fills in this foramen. The margins of the perforation or opening are hard and rounded, appear to be thickened and atheromatous. The heart weighs 16 ounces.

From a native female, aged 38, who died in hospital. There was no history obtainable of either rheumatism or syphilis, but the kidneys were highly contracted and granular. (*See further, "Medical Post-mortem Records," Vol. II, 1877, pp. 457-58.*)

75. An hypertrophied heart with dilatation especially of the right cavities. The aortic and mitral valves are thickened and opaque, particularly the latter. The left auriculo-ventricular opening is much contracted, admitting only one finger (mitral stenosis). Both anterior and posterior flaps and their chordæ tendineæ are rigid. The left auricle expanded. There is complete adhesion of the opposed layers of the pericardium, and consequent obliteration of the pericardial cavity. Weight of the heart 14½ ounces. From a Chinaman, aged 34, who died in hospital. (*"Medical Post-mortem Records," Vol. II, 1877, pp. 501-502.*)

76. Heart showing dilatation with hypertrophy of the right auricle and ventricle. The auriculo-ventricular orifice admits five fingers. There is no disease of the left chambers. This condition of the heart was associated with great emphysema and pigmentation of the lungs and chronic bronchitis, the result probably of prolonged "ganjah-smoking." From an East Indian (male) A. R., aged 25, who died in hospital. (*"Medical Post-mortem Records," Vol. II, 1878, pp. 683-84.*)

77. Hypertrophic dilatation of the right side of the heart, particularly of the right ventricle, the result of chronic asthma and great emphysema of the lungs. From a European male patient, aged 41, by occupation an engineer, who died in hospital.

78. Great hypertrophy with dilatation of the right cavities of the heart (tricuspid regurgitation). The auriculo-ventricular orifice admits six fingers. The muscular wall of the left ventricle is normal, and the mitral and aortic valves healthy. There was general, evidently long-standing bronchitis of both lungs. The liver was cirrhotic and "nutmeggy." From a native male, aged about 25, who died in hospital. (*See further, "Medical Post-mortem Records," Vol. III, 1879, pp. 553-54.*)

79. Heart showing considerable dilatation with hypertrophy of the right chambers, associated with chronic bronchitis and emphysema of the lungs, and a "nutmeggy" condition of the liver. The muscular tissue, just beneath the endocardium on the anterior wall of the right ventricle, exhibits zigzag lines, small dots, and patches of yellowish discoloration from fatty metamorphosis. The heart weighs 12¼ ounces. From a native male, aged 40. (*"Medical Post-mortem Records," Vol. II, 1880, pp. 555-56.*)

80. "Aneurism of the Heart." The preparation exhibits a very remarkable double pouch-like dilatation of the left ventricle, near its apex. The muscular wall is thinned in this situation. The pouches are lined by thickened and opaque endocardium, while over their external aspects the pericardium is similarly

thickened. The mitral valves appear to be healthy, the aortic slightly thickened, the aorta rough and atheromatous. (*Presented by Professor C. O. Woodford.*)

81. "Aneurism of the left ventricle, with disease of mitral valves. The posterior flap of the mitral is puckered up, and converted into an unyielding horizontal septum; the mitral orifice is reduced to a mere concentric slit, three-fourths of an inch long. The auricular surface of the diseased flap is somewhat roughened, and the auricle itself is dilated. From the angle of junction between the posterior wall of the left ventricle and the septum ventriculorum an opening, large enough to admit the forefinger, leads to an aneurismal sac, the size of a billiard ball, situated below the inferior and left border of the heart. Its outer and lower wall (which has been opened in two places) is about one-fiftieth of an inch thick, and is formed only of pericardium and fibrous tissue. The right ventricle is healthy. There was an obscure history of syphilis in the case" (Colles).
82. "Extensive atheromatous degeneration of the ascending aorta, with incipient dilatation. The apex of the heart (left ventricle) is adherent to the pericardium, and the ventricle itself is so much elongated as to form the entire apex of the heart, to the complete exclusion of the right ventricle, which falls far short of it. The apex of the left ventricle forms an aneurismal cavity, about the size of a walnut, with thinned walls, and containing an old laminated coagulum, now lying loose in the cavity, but which was originally adherent to its walls" (Colles).
83. True aneurism of the heart. The left ventricle is displayed. There is a circumscribed dilatation of its walls sufficiently large to hold an orange. This is situated at the apex, reaching further posteriorly than anteriorly. It is partially filled by firm, laminated coagulum. The muscular tissue constituting the sac is thin and atrophied, but strengthened on the exterior by abnormal thickening of the visceral pericardium. The heart altogether, and especially the left ventricle, is much dilated, but the specific and circumscribed dilatation of the apex to form the aneurism is quite distinct from the general expansion of the ventricular cavity. Death is said to have occurred quite suddenly, just after a meal. (*Presented by Dr. Cleghorn, Officiating Civil Surgeon, Cawnpore.*)
84. Heart showing aneurismal dilatation or pouching of the left ventricle near the apex. The sac or pouch is rather larger than a walnut, is lined by thickened endocardium, and in the fresh state was found partially filled with laminated fibrinous coagulum. The muscular tissue of the ventricle forming its anterior and inferior walls is much thinned, but the pericardium over the sac is thickened, and its opposed layers adherent for some distance around the same. The left ventricle generally is dilated. "No history of the case could be obtained, save that the man died suddenly." (*Presented by Dr. C. O. Woodford, Police Surgeon.*)

85. Heart with (1) mitral stenosis; (2) aneurism of the left ventricle; and (3) *ante-mortem* fibrinous vegetations in both right and left auricles. The heart is square-shaped, the apex formed by the right ventricle. This cavity is considerably dilated, and at the same time its muscular walls are hypertrophied. The right auricle is also dilated. A series of firm, rounded, or tongue-shaped fibrinous concretions are seen wedged into the intermuscular spaces, especially in the appendix. They are laminated and solid, or (the larger ones) hollow, and pulpy at the centre. The *left* auriculo-ventricular opening is greatly contracted, so much so as to admit with difficulty the tip of the little finger. On the auricular aspect a fringe of recent fibrinous deposit was found. The mitral flaps are exceedingly thickened and drawn together; their cordæ tendineæ foreshortened and matted together. The endocardium lining the left ventricle generally is thickened and opaque. Towards the base of the heart (posterior wall) the muscular tissue of this ventricle is hollowed out so as to form a sacculated dilatation, the size of a nutmeg, directed backwards and to the left. Its anterior wall is situated just behind the posterior mitral flap. Its inner surface is lined throughout by greatly thickened, fibrous-looking endocardium. There is thus great mitral stenosis, with active dilatation (aneurismal) of the left ventricle. The muscular wall of this cavity generally is dilated, not hypertrophied,—at the apex indeed, a good deal thinned. From an East Indian, Peter N., aged 25, who died in hospital. (*See further, "Medical Post-mortem Records," Vol. II, 1877, pp. 647-48.*)
86. Heart showing an aneurismal dilatation situated in the substance of the wall of the left ventricle, and communicating by a small circular opening with the ventricular cavity. From a native woman, aged about 40 years. "She was found dead in the street, and picked up by the police. On *post-mortem* examination, the vessels of the brain were found highly congested, and there was a large quantity of blood extravasated over its surface." The left ventricle of the heart is much dilated, and the lining endocardium throughout thickened and opaque, but the valvular structures are not specially involved; in fact, the aortic valves are almost normal. In the anterior wall of the ventricle, about midway between the base and apex, there is an aneurism-like pouching of the same, sacculated in character, about the size of a pigeon's egg. It was found filled with soft coagulum, but immediately lined by laminated decolourized fibrin. At this spot, on the outer aspect of the heart, the pericardium is seen greatly thickened and opaque, covered by a patch of organized "false membrane." The fundus of the pouch is formed principally by this thickened pericardium, the muscular tissue of the heart being quite wanting here, and much atrophied in the rest of the pouch. Situated a little to the outer side of the latter, is another shallower, but otherwise similar, circumscribed dilatation of the anterior ventricular wall, lined by greatly thickened, milky-

white endocardium. (*Presented by* Dr. S. C. Mackenzie, Police Surgeon.)

87. Heart showing an excessive deposit of fat on the external surface, most plentiful at the base and along the course of distribution of the coronary arteries. The muscular tissue is atrophied, and exhibits, in the deeper strata, extensive fatty metamorphosis. (*Presented by* Professor Allan Webb.)
88. "Heart of a patient, who died after the removal of a serotal tumour. There is excessive deposition of adipose tissue on the external surface of the organ, and fatty degeneration of the walls and *earnæ columnæ* of both ventricles" (Kwart).
89. The heart of a native male patient, aged 24, who died in hospital. There is intimate and longstanding adhesion of the two layers of the pericardium, and much fatty infiltration of the organized tissue between them. The whole organ is much enlarged, and its walls greatly thickened, chiefly in consequence of the enormous development of adipose tissue in connection with the latter. In the fresh state, the heart weighed 33 ounces, and measured seven inches in length and five in breadth. The muscular tissue of the heart is pale and fatty, and blended as it were with the thickened layers of pericardium, any line of demarcation between these structures being for the most part absent. On incising the walls of the ventricles (as has been done in the preparation), they are seen to be here and there embossed with smooth, oval-shaped, ill-defined nodules or flattened masses. These exhibit, under the microscope, scarcely any trace of muscular fibre, consisting principally (and some entirely) of highly fatty fibro-cellular tissue. The ventricular cavities are dilated.
90. The heart of a European, aged 68, who died from "senile debility." The organ is loaded with fat externally; so great is this on the right side, that the muscular wall of the ventricle is reduced to about three or four lines in thickness. The whole of the endocardium, *i.e.* of both ventricles, and that investing the valves is hazy or milky in appearance from fatty changes. The mitral flaps are thick and atheromatous. The coronary valves in a similar condition, coherent at their margins, and the endocardium just below the right valve distinctly calcareous. The ascending aorta exhibits marked fatty, atheromatous, and calcareous degeneration.
91. Marked fatty degeneration of the heart. From a European, aged 22, a leper, who died in hospital. The change is not uniform. It is most distinct in the left ventricle, along the *museuli papillares* and *septum ventriculorum*. These parts are seen to present hazy, zigzag lines of pale-ochre colour, just beneath the endocardium. Here the muscular *fasciuli* are especially altered,—soft and brittle, filled with small, dark, fatty granules, which replace more or less completely the *sarcous striæ*. In parts the fibre seems to be completely destroyed, oil granules and globules being visible, external to the *sarcolemma* as well as within it. (*See further*, "Medical *Post-mortem* Records," Vol. I, 1875, p. 766.)

92. A heart somewhat small and shrunken, and showing streaky, linear, wavy, pale-buff-coloured spots and patches, irregularly distributed, just beneath the endocardium of the left ventricle. In these situations the muscular tissue is very soft and friable, and under the microscope exhibits marked fatty degeneration (metamorphosis). The fasciculi are pale, their striæ indistinct or altogether absent, and fine granular or molecular fat takes the place of the sarcomeric elements within the sarcolemma. Taken from a native woman, aged 30, who died from exhaustion due to hæmorrhage after abortion. All the organs of the body were pale and anæmic. ("Obstetric *Post-mortem* Records," Vol. I, 1876, pp. 247-48.)

93. The heart of a native boy, aged 12, who died from malarial anæmia and exhaustion. The organ is pale and anæmic, and shows much streaky mottling of the left ventricle, due to fatty metamorphosis of the muscular structure. This, in parts, is very advanced (as seen under the microscope), little or no trace of striped fibre being visible, nothing but the sarcolemma sheath filled with dark dots, granules, and globules of fat.

The liver was highly fatty and pigmented; the spleen enlarged and dark.

94. Fatty degeneration (metamorphosis) of the muscular structure of the heart, affecting chiefly the *right* ventricle, and consisting of yellowish opaque dots, streaks, and patches situated just beneath endocardium. (Some of these are indicated in the preparation by means of small bristles passed through them.) The endocardium covering these spots shows, on microscopic examination, fatty infiltration of its epithelial cells, and the muscular fasciculi exhibit varying degrees of atrophy and fatty metamorphosis:—the striæ obscure, fibres attenuated, dotted, granular; in parts, almost entirely replaced by molecular fat.

From a native female, aged 25, who died from cholera. ("Medical *Post-mortem* Records," Vol. II, 1878, pp. 987-88.)

95. Fibroid induration of the heart: a specimen received from the dissecting-room. The left ventricle is slightly hypertrophied. The pericardium is throughout thickened, and especially over the anterior aspect of the left ventricle. This part on section reveals a dirty white or yellowish appearance of a portion of the anterior muscular wall, an inch and a half in length, and extending from the opaque pericardium to within a line or two of the endocardium. The latter is hazy or milky-looking throughout the ventricle, and the aortic valves and lining membrane of the aorta present the same conditions. A similar patch of yellowish colour is found in the right ventricle, occupying the upper half of the septum ventriculorum; is about the size of an eight-anna piece, shades off at the margins into healthy-looking muscle, and extends into the substance of the septum for about three lines. The muscular tissue of the heart at both these discoloured portions cuts more firmly, is more resistant than normal, and the

section presents a fibrous appearance. This is confirmed on microscopical examination,—the museular fasciculi at these spots being separated by numerous small, round cells, distributed specially thickly round the small blood-vessels, and undergoing everywhere transformation into delicate fibro-elastic tissue, while the museular fibre itself is in a state of fatty metamorphosis.

96. “Heart of a native woman, aged 45 years, a beggar, who died in hospital after eight months’ illness, showing subacute endocarditis affecting the left ventricle, also thickening of the mitral and triuspid curtains. The organized deposit, which is mainly of old standing—though some of it is clearly recent—is situated underneath the lining membrane of the ventricle. Isolated deposits of the same character, both old and recent, were seen in the right auricle. There were also found, after death, inflammatory hydro-pericardium, congestion and oedema of the lungs, bronchitis, hydrothorax, extreme cirrhosis of the liver, and general anasarca” (Ewart).

The whole organ is remarkably firm and rigid. Examined minutely, 1st, the visceral pericardium is greatly thickened—quite three to four lines in parts,—and, under the microscope, exhibits a large development of fibro-elastic tissue. In parts, groups of small, round, germinal cells are seen, as if from recent proliferation, and these are aggregated principally in the neighbourhood of the minute blood-vessels. The greater portion of the change, however, is of longstanding, the connective tissue being well formed, and extending from the thickened pericardium into the museular structure, so as in many instances to reach within a line of the endocardium. 2nd, the endocardial membrane exhibits similar changes, except that no recent cell proliferation can anywhere be detected. The membrane is greatly thickened, its deeper layers multiplied, and the connective tissue growth also dips into the museular tissue, separating the fasciculi into isolated bundles, and inducing fatty metamorphosis of the sarcous elements from direct interference with nutrition. This is an example therefore of true interstitial carditis, and in its progress and results closely allied, apparently, to the “cirrhotic” process in the liver, which was also found in this patient.

97. This preparation exhibits the morbid anatomy of acute pericarditis affecting a heart already chronically diseased, *i.e.* in a state of fibroid induration. The pericarditis is recent, both parietal and visceral layers being invested with soft, granular, and flaky lymph. On incising the heart’s walls, however, a very hard and resistant condition of portions of the museular tissue is found, especially of that of the left ventricle. Here, irregularly circumscribed patches or broad tracts of the museular substance (including, in most instances, nearly the whole thickness of the parieties) are seen of a dull-white colour, and of fibroid appearance on section, this new tissue replacing the museular fasciculi in these situations. The endocardium is also opaque and thick over the fibroid patches. The museular papillæ

and chordæ tendineæ of the left ventricle are much atrophied, but there appears to be no disease of the valvular structures. On microscopical examination, thin sections of this altered heart tissue exhibit in parts a very abundant small cell growth—the cells small, round, and with single nuclei,—in size about that of white blood-cells. These are associated with a delicate fibro-elastic tissue, which forms a kind of irregular reticulum. In other parts the cell growth is scanty, whereas the fibroid tissue is abundant, replacing altogether the muscular fasciculi, which are pushed aside, compressed, broken up into small fragments, and very generally in an advanced stage of fatty metamorphosis. In parts, again, the change is still more remarkable, the fibroid tissue enclosing much fat in its meshes, and thus constituting a firm adipose tissue, to the almost entire exclusion and replacement of both nuclei and muscular fibre.

The central or sub-endocardial portions of the muscular wall are chiefly affected, the morbid condition apparently advancing from here towards the periphery. The pericardium even, in many spots, is reached; but generally a thin layer of muscular tissue—in a state of greater or less fatty metamorphosis—still intervenes between it and the fibroid growth. “From a phthisical patient.” (*Presented by Dr. Green, of Howrah.*)

98. Heart showing a large, dendritic, *ante-mortem*, fibrinous vegetation in the right ventricle, attached chiefly to, and associated with, a cancerous deposit in the anterior wall of the same, near the apex. From a case of encephaloid carcinoma of the testicle, with secondary deposits in the lungs, liver, &c.—A European male, aged 43.

The large mass presents a beautifully villous or dendritic appearance. The base is firm, the surface broken up into tufts of various sizes, and these surmounted by a series of minute grape-like, grouped granulations, the majority strung in lines or rows like white beads. Examined microscopically, the whole mass of vegetating material is undoubtedly *ante-mortem*. The little bead-like growths (superficial portion) are composed of organized fibrin,—a cyst-like wall or sac filled with molecular and granular fat, and albuminous débris. Longitudinal sections through the deeper portions (base) show advanced organization of the fibrin,—blood-vessels, and young connective tissue rapidly developing, and in the lowest strata epithelial cells are found in clusters, surrounded by small, round, actively growing cells. The appearances therefore imply a primary infiltration of the sub-endocardial tissue with cancer-cells (germs), with subsequent deposit of fibrin, and advanced organization of the latter. (*See further, “Surgical Post-mortem Records,” Vol. I, 1875, pp. 237-38.*)

99. Heart from a case of diffuse melanosis,—an East Indian male, aged 44. Numerous small pigmentary deposits, of a deep black colour and soft consistency, are seen situated both at the surface, beneath the visceral pericardium, and also beneath the endocardium lining the cavities of the heart. These vary in size from a pin’s head to a pea, and structurally are carcinomatous

(enkephaloid). In the preparation, their positions are indicated by pins. Similar deposits were found in the liver, kidneys, brain, bones, &c. (*See further, "Medical Post-mortem Records," Vol. I, 1873, p. 16.*)

100. The heart of a native (male) aged about 40, who died suddenly. The right cavities are healthy, the left diseased. The left ventricle is dilated, and its walls irregularly thickened, the latter not being due to muscular hypertrophy, but to the presence of nodular growths beneath the endocardium, displacing the muscular structure, and projecting into the ventricular cavity. One of the largest of these occupies the upper third of the septum ventriculorum. Another smaller nodule is situated lower down, near the apex. Besides the nodular new growth, there is more diffuse sub-endocardial infiltration, of the same character, involving the lower papillæ of the mitral valve, and the posterior two-thirds of the mitral orifice. At the outer extremity of this orifice there is a circumscribed dilatation of the ventricular wall,—a small aneurismal pouch, about the size of nutmeg,—and studding the auricular surface of this orifice (mitral) are two nodular growths, one the size of a small hazelnut, the other of a pea. All these growths and infiltrations have a pale pinkish-white appearance, are moderately firm in consistency, and when thin sections taken from them are placed under the microscope, are seen to consist of small round cells and nuclei, undergoing in parts, transformation into spindle-celled and immature connective tissue; in others, degenerating, becoming granular and amorphous in small foci or masses. The whole of one of the larger nodules consists of this kind of material, and is apparently built up of a series of smaller nodules. They completely replace the muscular tissue. In the infiltrations, where muscular fibre still remains, it is found atrophied,—the fasciculi small, their striæ indistinct, and the sarcois tissue granular and fatty. There are a few small blood-vessels in the nodular growths. The arteries have their walls thickened and are prominent from the presence of an abnormally abundant nuclear growth in their immediate vicinity. On the whole, the structure of both nodules and infiltrations closely conforms to that of *gummatous growths*, and although the history of the case is wanting, yet there seems to be every probability of this being the real nature of the morbid alterations affecting the cardiac walls. The pericardium on the outer and anterior aspect of the left ventricle, opposite the largest nodule, is greatly thickened, and probably the visceral and parietal layers were here coherent. The muscular tissue of the ventricle in this situation is reduced to a fourth of an inch or less in thickness. (*Presented by Dr. Mackenzie, Police Surgeon.*)

101. "The heart and great blood-vessels, showing hypertrophy with dilatation of the left ventricle, and calcareous degeneration of the valves and the aorta" (Ewart). The aortic valves and the portion of the aorta immediately above them are the most diseased situations. The valves are greatly thickened, hard,

firm, and calcareous at their aortic insertions, their opposed surfaces being here coherent and ulcerated. The central coronary valve is extensively lacerated, the torn segments covered by a thick deposit of "vegetations," hanging loose in the ventricular cavity. The inner surface of the aorta is greatly thickened and roughened, with large calcareous plates lying exposed in its walls. These changes are most marked in the ascending portion, but extend throughout the arch.

102. Acute valvular endocarditis. Both mitral and aortic valves are affected. The free margins of the former are covered with fibrinous warty vegetations; several of the chordæ tendineæ have been torn through. The anterior flap is much thickened, and is ulcerated on its ventricular aspect. The aortic valves are a little opaque and crumpled. The endocardium of the left ventricle generally, but especially over the papillary muscles of the mitral valve, is milky-white. The ventricle, as a whole, is dilated. From an Armenian (male) patient, aged 20, admitted with right hemiplegia, and in whom, on *post-mortem* examination, a large blood clot was found in the left middle cerebral lobe, and hæmorrhagic infarctions in the spleen, pancreas, and kidney, all probably embolic in origin.
103. Great thickening and opacity of the endocardium lining the left auricle, particularly around the auriculo-ventricular opening. Both flaps of the mitral valve are also extensively diseased, very hard and firm, in parts absolutely calcareous, their margins thickened, rounded, and rigid, the chordæ tendineæ fore-shortened, so that the muscular papillæ almost touch the valve margins. The mitral orifice is reduced to about a third of its normal size. The left auricle greatly dilated. No history.
104. "Button-hole constriction" of the mitral valve. The margin of the coalesced flaps is rounded, thick, and rigid, and an opening, only a little larger than a crow-quill, is left between them. The chordæ tendineæ are much thickened and fore-shortened. The aortic and tricuspid valves are slightly thickened and opaque. The right cavities of the heart are greatly dilated, and the left auricle is also in a state of hypertrophic dilatation.
The patient died from general anasarca, including "hydro-pericarditis" and "hydro-thorax." (*Pathologia Indica*, No. 640, p. 17.)
105. Chronic inflammation (atheromatous) of the mitral valves, with ulceration and calcareous infiltration of the thickened tissues at the left auriculo-ventricular opening. The latter is reduced to a mere slit, the upper or ventricular portion of which exhibits ulceration and calcareous deposition. The muscular papillæ of the mitral apparatus are matted together, and are united directly to the margins of the diseased valves, *i. e.* without the intervention of chordæ tendineæ. The valves on the right side of the heart were found healthy, but the right chambers greatly dilated.
106. "Button-hole mitral constriction. The orifice will scarcely admit more than a common pencil" (Ewart). The thickening, contraction, and almost obliteration of the chordæ tendineæ are well

seen, as also the narrow and elliptical character of the contracted mitral orifice. On the right side of the heart the tricuspid flaps and appendages are abnormally opaque and thickened. No history. (*Presented by* Professor Edward Goodeve.)

107. "Button-hole constriction of the mitral orifice. The opening is a mere slit. From a native female, 25 years of age, who died suddenly" (Ewart). (*Presented by* Professor Norman Chevers.)
108. Heart and aorta, showing (1) great thickening, rigidity, and cohesion of the aortic valves, which, moreover, are ulcerated and partially calcified on their ventricular aspects; (2) atheromatous degeneration of the arch of the aorta; and (3) thickening, opacity, and great contraction of the mitral valves, with much narrowing of the mitral orifice. No history.
109. A section through the aorta and left ventricle, just above and below the coronary valves, to show the very extensively diseased condition of the latter. They are hard, firm, rough, nodulated and coherent, thus reducing the aortic orifice to a triangular rigid opening, which scarcely admits the tip of the little finger. The opposed and free margins of the valves, and the lining membrane of the sinuses of Valsalva exhibit, in addition, considerable calcareous infiltration. (Webb's *Pathologia Indica*, No. 118, p. 2)
110. "Heart of a European female, who suffered from regurgitant disease of the aortic valves. These are somewhat thickened, rigid, shallow, contracted, and one is quite incompetent to prevent the reflux of blood during the diastole. The upper margin of another shows tendency to retroversion. There is, consequently, a dilated and hypertrophied left ventricle. The curtains and muscular columns of the mitral are also thickened, but efficient. The ascending aorta is slightly dilated, and this, as well as the arch and ascending portion, are partially atheromatous. About an inch above the faultiest valve, there is a small aneurismal pouch, about the size of a nut, which is advancing towards the descending cava, at its termination in the auricle. The exact point where the sac impinged upon the descending cava is indicated in the back view of the preparation by two glass rods crossing each other. * * * * * In this case there was a double bruit over the aortic valves. It would have been doubtful whether this depended upon aneurism of the ascending arch, or upon not excessive regurgitant disease of the aortic valves. The moderate "water-hammer" character of the pulse decided the point. (Ewart.) (*Presented by* Professor Norman Chevers.)
111. Heart of an East Indian woman, aged 21, who died in hospital, showing great thickening, rigidity, and opacity of the mitral valves, particularly of the anterior flap, and consequent contraction of the mitral orifice, which barely admits one finger (incipient "button-hole constriction").
112. Section through the base of the heart to show an abnormally puckered, thickened, and coherent condition of the middle and

right aortic valves, so that the aortic orifice appears as if guarded by two valves only.

Taken from an European male, aged 35, who died from acute sloughing dysentery, with multiple abscesses of the liver. No rheumatic or syphilitic history.

113. A very beautiful example of "button-hole constriction" of the mitral orifice. Both flaps of the mitral are conjoined, are greatly thickened, opaque, and rigid. Their chordæ tendineæ have disappeared, the margins of the valves being united directly to the apices of the papillary muscles. There is a narrow slit, not larger than a crow-quill, left between the conjoined flaps, and forms an unyielding, rigid opening between the left auricle and ventricle. The aortic valves are also thickened and opaque, the right valve is ulcerated and perforated. The left ventricle and auricle are both dilated, the latter especially so, and the right cavities of the heart still more so. From a native female, aged 35. Five years previously to admission into hospital for heart disease, she had suffered from syphilis. There was no history of rheumatism. There was general anasarca of the whole body. A loud pre-systolic murmur was audible at the apex. The first sound at the base was indistinct, the second accompanied by a regurgitant murmur. There was much dyspnoea. She died from exhaustion and asphyxia. (*Presented by Professor Chuckerbutty.*)

114. A portion of the left ventricle, with the aortic and mitral valves, from a native woman, aged 40. The specimen exhibits extensive disease of both mitral and coronary valves. The latter are of cartilagenous consistency, greatly thickened, irregular or puckered and coherent; the opening or space left between them was not much larger than a goose-quill. The mitral flaps are similarly affected, are coherent, and adherent to the papillary muscles, the chordæ tendineæ having almost completely disappeared. Between the valves is left a slit or chink-like opening, through which a glass rod has been passed. It is a very characteristic example of the so-called "button-hole constriction" of the mitral. The heart was in a state of hypertrophic dilatation, particularly the right chambers. It weighed 14 ounces. (*See further, "Medical Post-mortem Records," Vol. I, 1873, p. 90.*)

115. The heart of a European (male) patient, aged 36, who died in hospital. There is considerable fatty deposit on the external surface. The right cavities are dilated, and their walls somewhat thinned. The tricuspid and pulmonary valves are healthy. The left ventricle is hypertrophied and dilated. Its walls are abnormally thickened and firm, except at the apex, where they are thinned out. The aortic valves are greatly thickened and puckered or crumpled; the middle and right valves united together; the former perforated near its free margin. The aorta, just above these valves, exhibits two small patches of atheromatous thickening. The endocardial investment of the mitral valves is a little opaque; the left auriculo-ventricular opening wide; the auricle much dilated. The patient stated that, about

twenty years ago, he had suffered from acute rheumatism, but without any chest complication. Twelve years ago he had syphilis. (See further, "Medical *Post-mortem* Records," Vol. I, 1873, p. 100.)

116. Chronic rheumatic endocarditis. The left auricle and ventricle are preserved, showing slight thickening and opacity of the general endocardial lining of these cavities and of the aortic valves, while the chief change is in the mitral valves. Both flaps of the latter are much thickened, the chordæ tendineæ fore-shortened and rigid, the orifice contracted, and the valves quite incompetent. From a native female, aged 20, who had suffered from acute articular rheumatism at the early age of four years, and had ever since then been subject to frequent attacks of dyspnœa and palpitation.

117. Heart showing extensive disease of the mitral valve, and hypertrophic dilatation of the left auricle and right chambers.

On the ventricular aspect the mitral valves are seen closely drawn together, thickened, and rigid: the chordæ tendineæ fore-shortened, the muscular papillæ almost touching the margins of the valves. On the auricular aspect there is great inflammatory thickening all round the mitral orifice, with recent warty vegetations thickly distributed upon the same. The orifice itself is reduced to a mere chink (stenosis), which barely admits a glass rod as thick as a crow-quill (see preparation). Altogether a very typical and characteristic specimen of the so-called "button-hole contraction" of the mitral. The right auricle is greatly dilated, is almost the size of an ordinary ventricle. Imbedded in its walls, especially in the appendix, are several globular *ante-mortem* vegetations or fibrinous concretions, which vary in size from a hazelnut to a pea. The smaller ones are solid, composed of concentric or laminated fibrin, undergoing decolourization. The larger are similarly composed, laminated at the periphery, but hollow at the centre, and on incision a little opaque, milky, fluid (disintegrating molecular fibrinous material) escapes.

The patient, a native male, aged 50, was brought into hospital in a moribund condition, suffering from great dyspnœa, and died within six hours of admission. No history of his illness could therefore be elicited. (See further, "Medical *Post-mortem* Records," Vol. I, 1875, pp. 639-40.)

118. Another similar specimen. The mitral flaps are blended together so as to leave only a small semi-lunar chink, which barely admits the tip of the finger. This is well seen from the auricular side. The coronary valves are also much thickened and partially coherent. The left auricle and the right cavities of the heart are dilated.—From a native woman, aged about 40, admitted moribund. No special history could be obtained. (See further, "Medical *Post-mortem* Records," Vol. II, 1877, pp. 383-84.)

119. A section from the base of the heart of an American seaman, aged 45, who died in hospital from pulmonary phthisis. The aortic valves are alone preserved. These exhibit great thicken-

ing, cohesion, rigidity, and superficial ulceration, evidently chronic in character, and producing considerable contraction of the aortic orifice. ("Medical *Post-mortem* Records," Vol. I, 1878, pp. 729-30.)

120. Calcareous, nodulated thickening of the aortic valves. The central segment is principally involved. On its ventricular aspect, at the junction with the right lateral valve, is a globular swelling, the size of a sparrow's egg, the deeper portion hard and calcified, the superficial soft and fibrinous. At the centre it is ulcerated; a perforation exists, through which a fine glass rod has been passed; and on the aortic aspect of the same a fibrinous thrombus, an inch in length, is firmly attached by its base, the other end lying free in the aorta. The left lateral coronary valve exhibits calcareous thickening at its centre, taking a nodulated form, and almost filling the sinus of Valsalva immediately behind it. The mitral valve is thickened, but not calcareous. The left ventricle is greatly hypertrophied, and its cavity also dilated. No history. (*Presented by* Professor Edward Goodeve.)
121. "Heart, the left ventricle of which is hypertrophied. There are hard calcareous deposits on the aortic valves. The endocardium of the left ventricle is thickened. The sinuses of Valsalva are inordinately dilated, but the lining membrane of the aorta is healthy" (Ewart). The calcareous thickening of the valves is most remarkable. Their ventricular surfaces and free margins are studded thickly with minute, hard concretions, some being conical, and even pointed. Two of the valves have coalesced along the entire extent of one-half of their opposed margins—from the aortic insertions to the corpora Arantii—so that virtually the aortic orifice is guarded by two valves only. The coronary arteries are dilated, and their walls atheromatous.
122. A section from the left ventricle of the heart, exhibiting remarkable stenosis of both the aortic and mitral orifices. The former is so much contracted that it will barely admit the tip of the little finger. The coronary valves are conjoined, rigid, tuberculated, and calcareous. The mitral orifice is represented by a transverse slit, about three-fourths of an inch in length, the margins of which are also much tuberculated, hardened, and partially calcified; the auricular aspect is, moreover, deeply fissured and ulcerated at one extremity. The left ventricle was hypertrophied and dilated, the left auricle much dilated, and the right chambers of the heart also showed hypertrophic dilatation. From a European, John D., who died in hospital on the 16th September 1870.
123. The heart of a European patient, who died in the Presidency General Hospital, showing very remarkable obstructive disease at both the mitral and aortic orifices. The former is so much contracted that it barely admits the tip of the finger; its margins are rough, hard, partially calcareous, and the whole orifice forms a mere triangular-shaped unyielding, opening—a

rigid diaphragm—between the auricle and ventricle. The curtains of the valve are also thickened, their chordæ tendineæ fore-shortened and opaque. Similar changes, but not so marked or advanced, obtain at the aortic orifice. The coronary valves are partly conjoined, their free margins rounded and irregular,—altogether incompetent. No history received. (*Presented by Dr. W. J. Palmer.*)

124. A section from the aorta with the coronary valves, which show chronic atheromatous changes. The central and right valves are especially thickened, rigid, slightly tuberculated, and calcareous. Their adjacent halves—from the aortic attachments to the respective corpora Arantii—conjoined. From a native male, aged 40, who died of cholera.
125. The heart of a native female patient, who died in hospital from acute articular rheumatism, complicated with carditis. The preparation shows evidences of (1) *pericarditis*, in the form of a soft granular layer of lymph, which coats both surfaces of the heart, and is very distinct at the base, on the posterior aspect of the right auricle and ventricle; (2) *endocarditis*, the lining membrane of the whole of the left ventricle abnormally opaque and milky-looking; the mitral valves not affected, but, at the junction of the right and middle aortic valves, is a large, recent, fibrinous vegetation (about the size of a hazelnut), irregular in outline, and hollowed out at its centre; the left valve is perforated (position and size of perforation shown by a glass rod). Lastly, the whole thickness of the ventricular wall, just below and behind the aortic vegetation, has undergone ulcerative softening and perforation (*myocarditis*), so that a communication has been established between the two ventricles, by a somewhat ragged opening, sufficiently large to admit a director. Its position is indicated by another glass rod. This aperture is partially overlapped in the left ventricle by the vegetation above described; in the right ventricle it was found plugged by a fibrinous clot, which has been removed, and is now attached by a piece of thread, immediately above it.
126. The heart of a native male (Mahomedan), aged 25, who was admitted into hospital in a moribund condition, with a history of having suffered from "fever" for eight days. There was much dyspnœa, and a temperature of 104°F. He died within twelve hours. The middle and left coronary valves are seen thickly studded with soft, recent, warty vegetations; the middle valve is also ulcerated and perforated at its centre. There was no pericarditis. (*See further, "Medical Post-mortem Records," Vol. I, 1875, pp. 881-82.*)
127. Extensive thickening and ulceration of the coronary valves, the ventricular surfaces of which are covered with soft, fibrinous, warty vegetations. The aortic orifice is much constricted. The left ventricle is widely dilated, and to a certain extent hypertrophied; the left auricle and right chambers of the heart show similar changes. From a native male, aged 44, who died in hospital.

128. A section from the base of the heart of a Mahomedan prisoner, Ramzan Alli, aged 30, who died in the Allahabad jail hospital from acute valvular endocarditis. The aortic valves are seen much thickened and opaque. The central and right flaps are imperfectly separated, so as to give the appearance of two valves only at the aortic orifice. The remains of the thickened cord-like septum between these valves is, however, recognizable. The left valve is thickly studded with soft, whitish, granular or warty vegetations, which form a complete fringe over the upper half of the ventricular aspect of the valve, and along its free margin. The endocardium, at the junction of this left valve with the central flap, is deeply ulcerated, and covered for half an inch below the ulcer by minute, reddish, recent inflammatory granulations. The left free edge of the central valve bears a rounded soft vegetation, rather larger than a pea, and a similar, but smaller, growth exists just below the corpus Arantii of the right coronary valve. There are traces of endocarditic thickening on the ventricular surface, and a few small vegetations at the free margin of the anterior flap of the mitral, which has been preserved. The left ventricle was much dilated, and its walls at the same time thickened. The whole heart weighed 15 ounces. (*Presented by* Surgeon Shirley Deakin, F.R.C.S., Officiating Superintendent, District Jail, Allahabad.)

129. Aneurism of the anterior flap of the mitral valve. The specimen was obtained from a native female received into the Campbell Hospital, Calcutta, in a moribund condition, and who died a few hours after admission. No specific history was therefore obtainable. The aneurismal pouch is the size of a small hazelnut, and has ruptured into the left auricle. The orifice of the little sac is situated at about the centre of the ventricular aspect of the anterior flap of the mitral, and is large enough to admit a crow-quill. A thin layer of coagulum was found lining the pouch in the recent condition. The aortic valves, particularly the middle valve, and the endocardium immediately below it, are covered with recent fibrinous, warty vegetations, and a good deal crumpled and thickened. The lining membrane of the aorta is atheromatous. (*Presented by* Moulvie Tameez Khan, Khan Bahadur, Lecturer on Medicine, Campbell Medical School.)

130. Heart, showing slight thickening of the mitral valves, and a small pea-like aneurism, situated at the centre of the anterior flap. Its orifice is directed towards the ventricle, the little pouch or sac towards the left auricle. The muscular tissue of the heart is pale and soft.

There was no evidence of this lesion during life. From a native male (Hindu), aged 23 years, who died in hospital from chronic catarrhal pneumonia.

131. "Vegetations upon the aortic and mitral valves, with dilatation and hypertrophy of the left ventricle; rest of the heart healthy." (Allan Webb: *Pathologia Indica*, No. 869, p. 32.)

The disease is most marked in the aortic valves, the left flap of which has ulcerated, and been thus divided transversely into two portions,

an upper and a lower, upon both of which vegetations have formed. The middle valve is greatly contracted, and covered also with large warty vegetations. The right valve is puckered or erumpled, and quite separated from the middle by an ulcerated fissure. Almost the whole of the ventricular aspect of the mitral valve is deeply eroded, and the margins and surface of the disintegrating lamina are crowded with vegetating villous growths.

132. Acute valvular endocarditis, associated with articular rheumatism. The curtains of the mitral valve are fringed with recent warty vegetations, and the endocardium of the whole of the left ventricle is abnormally thickened and opaque-looking. Muscular structure healthy. Specimen taken from Ramoni, a Hindu woman, aged 30, who died from rheumatic fever on the sixth day after admission. When admitted, in addition to the articular inflammation, a loud mitral regurgitant murmur was audible.
133. The heart of a Mahomedan lad, aged 19, who died in hospital. The aortic valves are much thickened and shrunken, their ventricular surfaces covered with luxuriant warty vegetations. Similar growths are observed on both curtains of the mitral valve, one of which, half an inch long, and somewhat tongue-shaped, hangs down from the lower margin of the anterior flap into the ventricular cavity. Numerous minute vegetations are scattered over the endocardium of the left auricle. The lining membrane of the aorta, immediately above the coronary valves, presents two small ulcers or acute erosions, each about the size of a split-pea. The left ventricle is somewhat hypertrophied.
134. Warty vegetations of the aortic valves. The right and left segments both exhibit, on their ventricular aspects, hard, rough growths, which are also incipiently calcified. The ventricular cavity is slightly dilated and hypertrophied. No history.
135. Inflammatory thickening of the mitral valves, with the projection into the left ventricle of a large, irregular-shaped, partially calcified vegetation, about the size of a horse-bean. It is attached to the thin inferior margin of the anterior flap at its base, while the other end floats free, and is directed towards the aortic orifice. The aortic valves are a little opaque and erumpled. The left ventricle both hypertrophied and dilated. From a native Christian female.
136. The heart of a native female, aged 24, a beggar, who was admitted into hospital in a very weak and emaciated condition, with the history of having "suffered from intermittent fever and enlargement of the spleen for the last six months, and of having had an attack of articular rheumatism about a month ago." The right ventricle is dilated and its walls thinned. The tricuspid valve has a large fibrinous vegetation on each of its divisions. The pulmonary valves are converted into an irregular ring by warty vegetations, only very small portions of the proper valve-structure being visible. "The edges of the mitral were slightly thickened; the aortic valves healthy." The whole heart is atrophied and

small. (See further, "Medical *Post-mortem* Records" Vol. I, 1875, pp. 859-60.) (Presented by Surgeon Gerald Bomford, M.D.)

137. A magnificent example of a cardiac polypus. The growth is about the size of a small orange, oval in shape, attached by a firm pedicle to the upper part of the right auricular wall, a little to the inner side of the opening for the superior vena cava. It measures $5\frac{5}{8}$ inches in circumference, $2\frac{1}{8}$ inches in longitudinal diameter, $1\frac{7}{8}$ inches transversely. The upper free surface is rounded, the lower grooved as if by the current of blood from the superior cava to the auriculo-ventricular opening. The upper part of the polypus exhibits on one side an irregular mass, which bears the impress of the appendix auriculæ, and was doubtless formed within it; the main bulk of the growth, however, belongs to the auricle proper, and hangs loose (*i.e.* attached by the pedicle only) within that cavity. On section, the polypus is firm, particularly at its base, of a pale reddish-brown colour, with here and there small portions opaque-white or yellowish. The endocardium lining the auricle is reflected from the pedicle over the entire polypus, can be separated with the forceps from the substance of the growth, and exhibits under the microscope the delicate filamentous structure and epithelial covering which characterize the endocardial membrane.

Microscopic sections from the polypus itself show a delicate, reticulated structure, permeated by numerous blood-vessels and capillaries passing inwards from the endocardial investment into the substance of the growth, and being especially well marked at the base or pedicle. The interstices are filled up with blood-cells, by a dark pigment matter (hæmatoidin), and a new cell growth exhibiting a tendency to conversion into immature connective tissue; all of which conditions evidently indicate that the polypus had been of some duration, and was considerably advanced in "organization." The auricular wall is much thinned and dilated. The tricuspid valves are short, and their chordæ tendinæ thickened and stunted. The pulmonary valves are healthy. The foramen ovale is closed. The aortic valves are thickened, puckered, and slightly fenestrated. The mitral valves are also slightly thickened and opaque. The coronary arteries are healthy, but the veins are much dilated, and the coronary sinus in the right auricle is abnormally wide. No large blood-vessels can be traced into immediate proximity of the polypoid growth; it does not, therefore, appear to have originated as an extravasation of blood beneath the endocardial membrane, but is probably the result of inflammatory changes (endocarditis), perhaps in part congenital. The impediment to the current of blood offered by such a large polypus must have been very considerable. No history. (Presented by Professor F. J. Mouat.)

138. "Heart and right lung. The right ventricle and the ramifications of the pulmonary artery are laid open to their minute divisions, showing the existence of *ante-mortem* coagula within them. From a native prisoner, who died phthisical, and with an abscess between the rectum and bladder" (Ewart). This is an example,

probably, of the firm fibrinous variety of coagulum, which, in rare instances, forms during the *articulo mortis* in asthenic individuals, with a slow, enfeebled, and embarrassed circulation. (*Presented by* Dr. Beatson of the General Hospital.)

139. "Heart of a Hindu, aged 30, who died of pyæmia 18 days after his right femoral artery had been tied in Scarpa's triangle for elephantiasis of the lower third of the leg. The femoral artery and vein, and the iliac veins are healthy; a minute abscess was found in each kidney. Both lungs were full of patches of dead tissue, surrounded by zones of red hepatization. The preparation shows a large *ante-mortem* coagulum, occupying the right ventricle, and extending into the pulmonary artery, and into its main branches. The clot has taken a cast of the three pouches behind the sigmoid valves. The left ventricle and aorta are occupied by a smaller coagulum" (Colles).
140. "Heart of an adult Hindu, who died of phthisis, to illustrate the formation of coagula in the heart where death is protracted. A large coagulum is seen entangled in the right ventricle, which originally extended into the pulmonary artery. A much smaller one is seen in the left ventricle, extending thence for some distance into the aorta." (Both coagula have been torn across so as to form two portions.) (Colles.)
141. "Large *ante-mortem* coagula, found in the heart of a Musalman, aged 20, who had suffered occasionally, for a month previously, from ordinary intermittent fever, and died suddenly without apparent cause. The large coagulum on the top was found in the right auricle, the next in the right ventricle, the third in the left ventricle, and the two long coagula at the bottom in the vena cava, near the liver. All the coagula were 'of a pale colour, and closely resembled in colour and appearance half-cooked veal,' but at their free edges merged into ordinary coloured coagula" (Colles). (*See also, Indian Medical Gazette, May 1868, p. 105.*) (*Presented by* Dr. J. R. Jackson, Superintendent, Meerut Central Jail.)
142. "An *ante-mortem* clot, which filled the right ventricle and extended a long way up the pulmonary artery and its branches. It occurred in an old woman (Irish descent), who was undergoing treatment (for leprosy) by gurgan oil, internally and externally, and apparently with some benefit. She suddenly got intense dyspnoea, and I diagnosed this condition, pulmonary embolism, as there was nothing else to account for her sudden and distressed condition of dyspnoea. The specimen is useful as showing a common mode of death." (*Presented and described by* Dr. J. Ewart.)
143. "*Ante-mortem* depositions of fibrin-like ribbed buttons, attached to the right auricular wall by their pedicles" (Ewart).
- These are characteristic *ante-mortem* cardiac thrombi of the variety called "globular vegetations" by Laennec. They are firmly fixed by narrow pedicles in the small interstices between the muscular trabeculæ of the auricular wall. The largest, flattened and somewhat fan-shaped, is the size of a hazelnut, the others like peas. They are hollow, or composed of solid laminated fibrin.

144. "The heart of a patient named Kureem Khan, who died of asthma." The right ventricle is dilated. Imbedded between the columnæ carneæ are numbers of globular vegetations (thrombi), hollow centrally, and, in the fresh state, found filled with purulent-looking fluid, which yet contained no pus-cells when examined microscopically, but consisted evidently of softened broken-down fibrin. These globular vegetations vary in size from that of a sparrow's egg to that of a pea, and some are smaller.
145. Heart laid open, showing numerous minute, globular vegetations imbedded firmly amidst the intersections of the muscular trabeculæ of the left ventricle. They vary in size from a large barley-grain to a pea, and consist of decolourized fibrin; some of them are hollow, while others are solid and laminated. The heart is somewhat small (weight $7\frac{1}{4}$ ounces), and the muscular walls atrophied. From a native male patient, aged about 40, who died in hospital from pulmonary phthisis.
146. The heart of a native woman, aged 22, who died from pelvic peritonitis, following "instrumental labour." Two globular fibrinous vegetations, one the size of a large pea is seen attached to the free margin of the posterior tricuspid flap, the other, the size of a hazelnut, at the junction of the right and middle aortic valves. These vegetations are of a pale-buff colour, soft, and friable. That on the aortic valves is partly disintegrated, and its surface in consequence rugged and broken down. Both exhibit a hollow interior, and a concentrically laminated disposition of the fibrin composing them. They are undoubtedly *ante-mortem*. (See further, "Surgical and Obstetric *Post-mortem* Records," Vol. I, 1876, p. 342.)
147. A hollow, globular, *ante-mortem* vegetation, attached near the apex of the right ventricle to the muscular wall, and also to the posterior and inferior flaps of the tricuspid valve. It is the size of a plum. From a native male, aged 38, who died from pneumonia.
148. A very large globular thrombus or dendritic, *ante-mortem*, fibrinous vegetation, attached firmly to that portion of the auricular wall which lies between the superior and inferior caval openings. It is the size of a hen's egg. The upper part is rounded and smooth where it has projected into the appendix auriculæ. The lower part is broader, and, in this situation, the thrombus was found to have softened and given way, discharging its yellowish-white, cream-like contents into the auricle and ventricle. In the latter, particles of the same, mingled with fluid dark blood, filled the cavity, and the pulmonary artery was also largely occupied, but not absolutely obstructed, by the same material, which, moreover, was traceable into the smallest branches of this vessel in both lungs. In the pre-softened condition this thrombus must have almost completely filled the right auricle. From a native male patient, aged 40, who died in hospital from cirrhosis of the liver and ascites, &c. (See further, "Medical *Post-mortem* Records," Vol. II, 1878, pp. 853-54.)

149. Heart, exhibiting a bifid condition of the apex, the right ventricle descending below the left. From a native male, aged 30, who died from pulmonary phthisis.
150. Heart with bifid apex. From a native male patient, who died from fibroid phthisis.
151. Congenital perforation of the septum ventriculorum, with valvular endocarditis of the right side of the heart. Fibrinous vegetations surround the right auriculo-ventricular opening, and are attached to the margins of the tricuspid valve. A little below and behind the superior flap of this valve is a perforation of the inter-ventricular septum,—an opening capable of admitting a crow-quill, and through which a green glass rod of this size has been passed. The corresponding orifice in the left ventricle is situated just below the point of junction of the middle and left coronary valves, and is provided with a valve-like arrangement of thickened endocardium, which probably prevented, to considerable extent, the passage of blood from the left ventricle into the right, but not *vice versâ*. A few small fibrinous vegetations surround the left auriculo-ventricular opening. The foramen ovale has quite closed, but the Eustachian valve is unusually developed and distinct. “The little girl to whom this heart belonged was of Armenian parents, born in Calcutta, aged 7 years; was delicate and puny from her birth, subject to fever of remittent type, and to its sequelæ,—spleen and glandular enlargements. From birth some peculiarity was observed in the heart’s action, attributed to imperfection of the valvular apparatus (and probably patency of the foramen ovale). As she advanced in life the disturbance became greater, the heart’s action irregular and tumultuous. No distinction could be observed of the nature of a double beat, but each contraction seemed to engage both ventricles at once, and the sound was unlike anything, unless the forcing of water through a sieve. During the last ten months there had been gradually increasing anasarca and accumulation of fluid in the pericardium, encroaching enormously on the cavity of the thorax, and impeding respiration. It should be mentioned as a curious fact of the family history, that the parents for several generations have been blood-relations, that the child’s mother for several years of infancy suffered from similar symptoms of heart disease, that two of the other children have exhibited malformation or mal-development of parts, *i.e.* cleft palate, &c.” (*Note by Professor Stewart.*) Webb’s *Pathologia Indica*, No. 1600, p. lvi.)
52. Heart showing congenital perforation of the septum ventriculorum. The right auricle and ventricle are dilated, and their walls thinned. The endocardium lining the ventricle immediately above the superior tricuspid flap presents much thickening and opacity over an irregularly rounded space, about the size of a rupee; and the free surface of this patch was found a little roughened and vascular, as if from recent inflammatory action.

On the opposite wall of the ventricle, *i.e.* in the septum ventriculorum, one inch below the central pulmonary valve, is a funnel-shaped perforation, sufficiently large to admit a crow-quill. Its direction is obliquely upwards, so that its orifice in the left ventricle is situated about half an inch below the point of junction of the middle and left coronary valves, at the triangular, fibrous, and semi-transparent portion of the septum seen in most normal hearts. This opening is wider than on the right side, and its margins are surrounded by thickened endocardium. Free communication evidently existed between the right and left ventricles during life. The mitral and aortic valves are healthy. The aorta is somewhat contracted and small. The muscular wall of the left ventricle is a little hypertrophied, and its cavity slightly dilated. Small globular, fibrinous vegetations are seen imbedded in the muscular interspaces of the left ventricle, and again in the right auricle (*ante-mortem*). The pulmonary artery seems to be a little widened, but its lining membrane is healthy. There are three coronary arteries, one originating in the right sinus of Valsalva, and two in the middle. The weight of the heart is $11\frac{1}{2}$ ounces.

From a native woman, aged 20, who died from pneumonia after childbirth. There were no symptoms observed during life indicative of the cardiac lesion; the latter was only discovered *post-mortem*. (See further, "Surgical and Obstetric *Post-mortem* Records," Vol. I, 1878, pp. 455-56.)

153. Congenitally malformed and hypertrophied heart, weighing 15 ounces; with also, the pulmonary artery and arch of the aorta. The right ventricle forms the whole of the anterior surface and apex of the heart. At the upper part of its cavity there are three orifices or openings. One, directed upwards,—large, and guarded by three normally formed, but somewhat stretched valves, is seen to be the *aorta*. The aortic arch is well defined, and gives off the usual number of branches, the vessel then descending to the left side to form the thoracic aorta. The second orifice or opening in the right ventricle is placed a little behind and below the left lateral valve of the above aorta. It admits one finger, with some difficulty, for about half an inch, when a membranous ring is encountered, evidently constituted by three congenitally conjoined valves,—the imperfect divisions between which are readily recognizable. Through this ring the tip of the little finger can only pass. This is the *pulmonary artery*, much reduced in size. It runs upwards, and, behind and below the aorta, divides into right and left branches for the respective lungs. The third opening in the right ventricle is situated at the upper part of the septum. It admits two fingers, is surrounded by a ring of thickened endocardium, and communicates directly with the left ventricle.

The right auricle is enormously developed, is fully as large as one's fist. Both the superior and inferior caval openings are distinct and very wide. This auricle communicates *first*, with the left auricle,

there being an almost complete absence of the inter-auricular septum; *secondly*, by means of a large patent "foramen ovale" (?) with a rudimentary left appendix auriculæ; and *thirdly*, by the same foramen, but separated by a narrow valve-septum, with the left ventricle. This orifice of communication with the left ventricle is guarded by two rudimentary valve-flappets (? the mitral).

The left auricle, much smaller than the right, receives the pulmonary veins from both lungs. It has no communication with the left ventricle, nor with the rudimentary left appendix auriculæ, but, as has been above described, is very imperfectly separated from the right auricle, in fact, forms part of a common auricular cavity.

The left ventricle is small and ill-developed. It communicates (*see* above) *first*, with the right ventricle; and *secondly*, by a rudimentary mitral (?) orifice with the *right* auricle, or dextral portion of the common auricle. The muscular wall of the right ventricle is enormously hypertrophied,—over an inch in thickness at the apex. It evidently takes the place of the normal *left* ventricle; and this remarkable heart thus consists in reality of but three imperfectly formed chambers,—two ventricles and a highly developed auricle. The admixture, therefore, of arterio-venous blood must have been very considerable.

The subject was a Hindu female, aged 18, who died in hospital from a large malignant tumour (sarcoma) of the back. She was markedly cyanotic; and, on auscultation over the heart, a loud, rasping, systolic bruit was heard both at apex and base, but most distinct mid-sternum. The area of cardiac dulness was much increased, and principally to the right of the sternum. A dilated right heart, with probably patent foramen ovale, was diagnosed during life, but the very extensive cardiac malformations above described were only discovered *post-mortem*. It is perhaps noteworthy to record that the spleen was found congenitally multilobulated in this case, consisting of no less than seven distinct and separate lobules of varying size, only held together by investitures of loose connective tissue and peritoneum. (*See further*, "Medical *Post-mortem* Records," Vol. III, 1879, pp 384-85.)

154. "Heart of a new-born infant, in which there is exemplified arrest of development of a small portion of the septum ventriculorum. The opening is near the base of the ventricles, and is indicated by the insertion of a portion of wire. It is associated with remarkable narrowness of the pulmonary artery. The ductus arteriosus and foramen ovale are patent" (Ewart). (*Presented by* Professor R. O'Shaughnessy.)

155. "Heart of an infant, five months old, with patent foramen ovale and pervious ductus arteriosus. A small glass rod is passed through the foramen ovale, and another, leading from the pulmonary artery, is seen to traverse the ductus arteriosus, emerging therefrom into the aorta" (Ewart). (*Presented by* Professor Duncan Stewart.)

156. "Atheromatous deposit in the pulmonary and tricuspid valves" (Ewart). This is a much more interesting specimen than can be gathered from the above brief record, for it shows, 1st, *patency of the foramen ovale*,—a vertical slit, capable of admitting a crow-quill being observed at the upper margin of the fossa ovalis, by means of which a communication exists between the two auricles; 2ndly, thickening, opacity, and contraction of the *tricuspid valves*, and much narrowing of the right auriculo-ventricular orifice; 3rdly, almost complete obliteration—*atresia*—of the *pulmonary orifice*. This orifice is represented by a hard, calcareous, roughened ring, composed of the conjoined, highly atheromatous pulmonary valves. In the preparation it has been cut through. When the parts are brought together, a mere narrow fissure remains, scarcely admitting the point of a probe, and is the only opening between the right ventricle and pulmonary artery. The latter vessel is a good deal dilated, and its walls thinned. The right ventricle shows great hypertrophy of its muscular walls; the right auricle both dilatation and hypertrophy. The mitral and aortic valves, the left ventricle, and aorta all appear to be quite healthy. There is no history of the case recorded, but the lesions are undoubtedly congenital. (*Presented by Professor Edward Goodeve.*)
157. Heart showing complete patency of the foramen ovale, which measures an inch in length by half an inch transversely, and has a smooth, rounded margin, with no trace of valve-structure. The right auricle is dilated; the right auriculo-ventricular opening somewhat contracted; tricuspid valves thick, opaque, foreshortened; pulmonary valves thin and attenuated; pulmonary artery and its right and left branches greatly dilated; ductus arteriosus obliterated; valves on left side of heart normal. The aorta gives off from the convexity of the arch an additional branch, an artery about the size of an ordinary radial, originating between the left carotid and left subclavian, and probably representing the left vertebral artery. No history. (*Presented by Professor Eatwell.*)
158. "Heart of an adult, with patent foramen ovale, indicated by the presence of a red glass rod" (Ewart).
159. Heart showing congenital patency of the foramen ovale. The subject was a native Christian lad, aged 15, who died in hospital from dysentery and pleuritis. The existence of this condition was not suspected during life. The heart, otherwise, seems to be well developed.
160. Dilatation with slight hypertrophy of the right side of the heart, and imperfect occlusion of the foramen ovale. A valve-like opening exists, capable of admitting a No. 12 catheter, and thus a communication is established between the two auricles. From a native male, aged 35, who died from chronic bronchitis, with emphysema of the lungs.
161. "A portion of right ventricle and about half an inch of the commencement of the pulmonary artery. The orifice is seen

- guarded by two instead of three pulmonary semi-lunar valves" (Ewart).
162. A preparation, showing the pulmonary artery provided with two valves only. The calibre of the vessel above these valves is considerably enlarged. The specimen was taken from a native female, aged 20, who died from inanition and œdema of the lungs. The condition is purely congenital.
163. "A preparation showing four instead of three pulmonary semi-lunar valves. The supernumerary valve is scarcely half the size of any of the other three valves" (Ewart).
164. The heart of a patient, who died from cholera. The aortic orifice is guarded by two valves only, placed transversely. The right halves of these valves are agglutinated together firmly; are thickened, rigid and hard from calcareous deposit. The left half of each valve is much expanded and thinned. The slit or chink left between these parts just admits the extremity of the handle of a scalpel. The sinuses of Valsalva are considerably dilated. The left ventricle is hypertrophied; the right ventricle, on the contrary, is dilated and thinned.
165. A section from the base of the heart showing the aortic orifice guarded by two valves only. There is no evidence of endocarditis or thickening of these valves; the lesion appears to be congenital.—From a Hindu (male), aged 21, who died in hospital from typhoid fever.
166. Heart exhibiting congenital absence of one aortic valve, with morbid adhesion and thickening of the opposed margins of the two remaining. A hard, ectaceous nodule exists at the point of cohesion, and both segments are a little thickened and atheromatous. The left ventricle is not hypertrophied. There were no evidences of this lesion during life. The patient, a native (male), aged 28, died from diabetes. He is said to have been temperate in habits, and had not suffered from either rheumatism or syphilis. (See further, "*Medical Post-mortem Records*," Vol. II, 1876, pp. 141-42).
167. The aortic orifice of the heart, guarded by two valves only. The right and central segments have conjoined to form one valve, behind which are the orifices of both coronary arteries. Apparently quite a congenital lesion.
From a native male patient, who died of cholera.
168. Heart showing congenital deficiency of one aortic valve, and atheromatous thickening of the two that exist, with partial cohesion of their adjacent margins; calcification and hardening at this point, and slight ulceration on the ventricular aspect at the point of junction. From a native male, aged 30, who died from erysipelas. ("*Surgical Post-mortem Records*," Vol. I, 1880, pp. 703-4.)
169. Congenital malformation of the aortic valves. These structures are thin, transparent, and quite normal-looking, except that the central and right flaps are seen to be imperfectly developed,—conjoined from their adjacent aortic attachments forwards for

one-half of each valve, and where separating anteriorly, a single corpus Arantii is developed. The septum also, which separates these valves is imperfect and perforated, the opening as large as a crow-quill. There is no thickening or any other indication of inflammatory action in the production of these peculiarities,—they are evidently congenital. The other valves of the heart were all healthy; the organ itself somewhat small (weighing $6\frac{3}{4}$ ounces), but otherwise quite normal. From a native male, aged 24, who died from cholera. (“Medical *Post-mortem* Records,” Vol. II, 1878, pp. 761-62.)

170. Heart showing remarkable dilatation with hypertrophy of the right cavities, thickening of the endocardium and flaps of the tricuspid valve, and some dilatation of the pulmonary artery. The auriculo-ventricular opening is wide, admitting five fingers easily. In the appendix auriculæ, and along the ventricular septum are globular vegetations; *ante-mortem*, hollow thrombi, varying in size from a pigeon's egg to a millet-seed. The left ventricle is small; mitral valves a little thickened, and the mitral orifice slightly contracted. *The aorta is hypoplastic, congenitally narrowed and small.* From a native boy, aged 15. The heart weighed 12 ounces.
171. “The heart of a Sikh,” showing a cribriform condition of the aortic valves at their upper free margins.
172. Congenital cribriform condition of the aortic valves. From a native woman, who died from abdominal aneurism.
173. Congenital fenestration of the aortic valves near their free margins, particularly of the central valve. From a native lad, aged 17, who died from pneumonia complicating dysentery.
174. Aortic valves, showing fenestration at their free margins, but otherwise quite healthy in structure. From a native male, aged 25, who died from cholera.
175. Congenital fenestration of the aortic and pulmonary valves, which are otherwise quite normal. A section from the heart of a native woman, aged 30, who died from empyema.
176. Fenestrated or cribriform condition of the coronary and pulmonary valves at their superior or free margins. From a native male, aged 30, who died of cholera.
177. Fenestration of the pulmonary and aortic valves, apparently congenital. These structures are otherwise quite healthy.
A section from the heart of an Abyssinian sailor (lascar), who died from acute sloughing of the scrotum.
178. Remarkably (large) fenestrated aortic and pulmonary valves (congenital). From a case of chronic dysentery—a native male, aged about 35.
179. Aortic and pulmonary valves, showing minute congenital fenestration of their free margins, while the general structure of these valves is healthy. From Russiek Das, a Hindu, aged 27, who died from pulmonary phthisis.
180. Preparation exhibiting a similar condition of the coronary and pulmonary valves. From a native (male), aged 37, who died

from secondary hæmorrhage after the operation of excision of an elephantoid scrotum.

181. A portion of the right ventricle of a horse, showing a warty fibrinous vegetation, about the size of a nutmeg, attached to the free margin and chordæ tendineæ of one of the flaps of the tricuspid valve.

“The subject was a black horse, who had been worked hard, and reduced to a great state of debility. He died four days after admission into the veterinary hospital. The immediate cause of death was enteritis and diarrhœa; there was also great dropsy of the belly.” (*Presented by R. S. Hart, Esq., M.R.C.V.S., Calcutta.*)

182. A small atrophied heart from an aged Bengali, showing calcareous degeneration of the coronary arteries. Both vessels have been exposed at their origins, and slit up for a short distance. Their hard and brittle coats, tortuous outline, and opaque lining membrane can be readily distinguished.

“The whole of the thoracic aorta, as well as the abdominal, till its bifurcation into the common iliac arteries, and also the right external iliac, for about an inch and a half, were found infiltrated with the atheromatous deposit.” (Allan Webb, *Pathologia Indica*, No. 1677, p. liv.)

183. A small atrophied heart with thickening and opacity of the aortic and mitral valves, and a rigid, tortuous, calcified condition of the coronary arteries.

From an aged East Indian (male), who died from dysentery.

184. Calcareous degeneration of the coronary arteries. These vessels are seen to be remarkably prominent, a little dilated, tortuous, and their walls thickened and calcified. The aortic valves and aorta (both thoracic and abdominal) were similarly affected. The heart itself is small and atrophied, weighs $5\frac{3}{4}$ ounces. From an East Indian woman, aged 77, who died from chronic dysentery. (“*Medical Post-mortem Records*,” Vol. III, 1880, pp. 591-92.)

185. A small atrophied heart, with a thick deposit of yellowish fat on its external surface. The muscular tissue, especially that of the right ventricle, is much thinned, measuring only from two to four lines in diameter. It is generally softened, and in a state of fatty degeneration. The coronary arteries are varicose, rigid, and atheromatous, and the lining membrane of the aorta shows similar changes, especially around the origin of the above arteries.

Taken from a native female, aged 27, who died suddenly, and within two hours of admission into hospital, with symptoms of angina pectoris. (See further, “*Medical Post-mortem Records*,” Vol. I, 1875, pp. 749-50.)

186. A hypertrophied and dilated heart, found associated with marked granular degeneration of the kidneys. The aortic valves are thickened and partially calcified. The whole of the arch of the aorta presented great atheromatous thickening, with dilatation of the ascending portion. The orifices of origin of the coronary arteries are much contracted, scarcely admitting the point of a

probe: this is due to calcareous thickening around them. The interference with the nutrition of the heart thus produced probably accounts for its disproportionately dilated condition, and for the marked wasting and fatty degeneration of the muscular structure, especially in the left ventricle. From a native male, aged 53, who died from Morbus Brightii. The heart weighed $18\frac{1}{2}$ ounces.

187. "Aneurism of one of the coronary arteries." The preparation exhibits a section from the aorta, with an aneurismal dilatation of one of the coronary arteries. The sac is about the size of a small hazelnut, and is partly lined by fibrin. The orifice communicating with the sinus of Valsalva is smooth and rounded, in diameter about that of a goose-quill. No history.

188. Abnormally high origin of the left coronary artery. A section from the base of heart, including the aorta, has been preserved. The orifice of origin of the vessel in question is seen to be situated on the inner surface of the aorta, fully half an inch above the central aortic valve and its corresponding sinus of Valsalva.

From a Hindu, aged 25, who died from cholera.

189. A section from the base of the heart to show the abnormal origin of the coronary arteries. Both orifices of origin lie close together, just above the point of junction of the right and middle aortic valves, and quite above the sinuses of Valsalva. From a native male, aged 30, who died from syphilitic myelitis, with paraplegia.

190. "Portion of the femoral artery and vein *in situ*. The artery was divided by the point of a knife in one part, into which a red glass rod is now inserted. The division of the vessel is almost complete, only a small fraction of its posterior wall retaining its continuity. The vein, into which a dark-coloured rod is introduced, is untouched" (Ewart).

There is no history. The inference is that the injury was accidental. There are no evidences of repair. (*Presented by* Professor O'Shaughnessy.)

191. "Laceration of the femoral artery, veins, and nerves, and the partial plugging-up of the vessels near the points of injury" (Ewart). No history. (*Presented by* Mr. Covenpton.)

192. A portion of the left femoral artery, from a native coolie (porter), aged 50, whose thigh was crushed by the wheels of a railway locomotive (engine). The patient was brought to the hospital with the limb almost severed from the body, and the femoral artery, about the middle of the thigh, completely divided, yet pulsating violently. No hæmorrhage occurred owing to the laceration, twisting, and contraction of the arterial walls, and, when amputation was performed higher up the thigh, this free end of the vessel was found plugged by a firm coagulum. The specimen illustrates well the effects upon blood-vessels of lacerated and contused wounds.

193. Complete division of the right subclavian artery, due to a stab in the neck. The wound was deep and punctured, three-fourths

of an inch wide, and half an inch deep, situated immediately over the sternal end of the right clavicle. The artery is seen to have been severed in its "first portion," close to the origins of the thyroid axis and vertebral artery. The injury was inflicted with a sharp table-knife, by one Mahomedan upon another,—the deceased (aged 30), during a quarrel. There was profuse hæmorrhage, and death took place in a few minutes. (*Presented by the Police Surgeon.*)

194. The knee-joint of a native patient, Nakehed, a Mahomedan, aged 25, who, ten days previous to admission into hospital, had fallen from a height of about 18 feet upon the knee, without fracturing the femur or bones of the leg, &c.

On admission, a tumour, resembling an abscess, was found in the left popliteal space. It was laid open, and then seen to consist of a cavity, which was filled with decolourized blood-clot, with a sinus leading from it into the knee-joint. The latter was felt to be extensively involved in the injury, and the limb was therefore amputated at the lower third of the thigh.

The preparation shows rupture of the *azygos articular branch of the popliteal artery*. Perforation of the posterior ligament of the knee-joint (the aperture being ragged and soft, and admitting two fingers); and, within the joint, the anterior cruciate ligament is seen to be detached from the upper surface of the tibia, bringing away with it a portion of the spine of this bone, with the investing cartilage. The other ligaments of the joint appear to have preserved their integrity. A small piece of cartilage covering the internal condyle of the femur is also chipped off, and the whole synovial membrane of the joint thickened and vascular.

The popliteal artery itself, and all its other branches, except the one already noted, are uninjured. The azygos branch is seen only about two lines in length, the rupture having taken place close to the main vessel. The rest of the artery could not be traced, having probably become disintegrated and lost amongst the sloughy condition of the parts immediately superjacent to the joint.

195. The carotid arteries of two men who were hanged at the Presidency Jail. The specimen shows how the coats of these vessels have suffered from the violence inflicted upon them by the fall. The larger aorta and vessels are those of an adult Hindu. The "drop" was six feet. The common carotid on the right side, just below its bifurcation, has been completely separated. The divided ends have also retracted, leaving a space about a third of an inch in extent, where merely the fibrous sheath of the vessel holds these parts together. On the left side the injury has been less severe, and is situated a little lower down. It consists of mere cracking or fissuring of the lining membrane. The smaller specimen is from an Eurasian lad. Both common carotids exhibit rupture of the inner tunie, the fissuring on each side being at about the same level. The "drop" in this case was seven feet. In both men

the thyroid cartilage was fractured. (*Presented* by Dr. S. C. Mackenzie.)

196. The arch of the aorta and its branches, from an East Indian (male) hanged at the Presidency Jail. The carotid arteries are exposed, and exhibit a transverse fissuring of the lining membrane. This is situated on the right side, at a rather higher level than on the left. The muscular and other coats of these vessels appear to be uninjured. The arteries seem to have been forcibly compressed at these spots by the rope, and the lesion is therefore analogous to what takes place when a ligature is applied in the continuity of an artery.
197. The common carotids, with their primary divisions, from a convict hanged at Port Blair (Andamans). The man was a young healthy adult (aged about 25). The "fall" given about five feet. The knot was adjusted below the right ear. Death was instantaneous, owing to fracture of the cervical spine and pressure upon the cord. The right internal carotid is seen to be completely severed about half an inch above the point of its origin, and the divided ends have retracted so much as to leave a considerable gap between them. At the corresponding level of the external carotid, a delicate crack in the lining membrane also exists. The *left* external carotid exhibits a somewhat similar lesion, a transverse linear rupture of the internal coat, but the left internal carotid appears to have escaped altogether.
198. A specimen showing laceration of the internal tunic of the right (?) common carotid artery. From a case of judicial hanging.
199. "Sloughing of the left subclavian artery after the application of a ligature to the third portion of it, for the arrest of secondary hæmorrhage. The vessel has been completely cut in two by the disintegration of its structure, about an inch and a half from its origin from the arch of the aorta. * * * * *
The vertebral, thyroid axis, profunda cervicis, superior intercostal, and internal mammary are matted together into one mass by inflammatory exudation" (Ewart). The divided parts of the vessel are held together artificially in the preparation. (*Presented* by Professor O'Shaughnessy.)
200. "Preparation in which both common carotid arteries had been ligatured for the cure of an 'aneurism' in the right orbit, consequent upon an accident. Heart and great vessels with trachea and larynx are *in situ*. The vessels are injected with vermilion-coloured material" (Ewart).
"This specimen presents several points of interest. The common carotid arteries of either side have been obliterated and converted into fibrous cords throughout the great part of their length, remaining permeable only for about one-and-a-half to two inches at their lower, and three-fourths of an inch at their upper extremities. The circulation has been maintained mainly by the inferior thyroid and vertebral branches of the subclavian vessel, both of which are considerably augmented in size, especially the vertebral of the left side. The ascending cervical branches of

the inferior thyroid on both sides of the body are enormously developed. The external and internal carotid arteries have undergone very little change; they are permeable throughout, and their calibre but slightly decreased. Independently of the changes consequent on the ligature of the great vessels of the neck, the specimen is interesting as presenting varieties in the arteries unconnected with the surgical operations. The right subclavian, instead of springing from the bifurcation of an innominate trunk, is the last branch of the aortic arch, springing from the left extremity of the transverse portion, and proceeding to its destination behind the œsophagus and trachea, and immediately in front of the vertebral column. The common carotids spring from a short common trunk. On the left side the posterior scapular springs from the thyroid axis instead of from the transverse cervical, and the deep cervical is a separate branch of the subclavian. On the *right* side the thyroid axis is wanting, the supra-scapular and transverse cervical are derived from the commencement of the internal mammary, and the inferior thyroid is a direct branch of the subclavian." (*Described by Professor S. B. Partridge.*)

The history of the case has been furnished by Dr. Beatson, of the General Hospital, under whose care the patient, Christopher Quin, aged 30, a seaman belonging to a ship lately arrived in the Hooghly, was admitted on the 14th January 1864, and died on the 19th, anasarcous, with albuminuria. "A year or more ago, the patient said, while at New York, he received an injury to the right eye, which was followed by swelling in the orbit, causing protrusion of the eyeball. He was informed that this was an aneurism. To cure it, the right carotid was ligatured by Professor Mott, the American surgeon. He subsequently returned to England, and the swelling not having disappeared, the left carotid was tied at the eye infirmary. Beyond a whizzing noise in his head, he experienced no peculiar sensation or mischief from the operations; and the swelling in the orbit seems to have ultimately disappeared." (*Presented by Dr. Beatson, of the General Hospital.*)

201. The circle of Willis from the above case, showing "extra development of the left vertebral, the basilar, and right posterior communicating arteries."
202. Specimen illustrating the application of a catgut ligature to an artery. The axillary artery (with the vein) is shown, from a case in which amputation at the shoulder-joint was performed, and a carbolized catgut ligature applied to the divided end of the vessel. The patient died from pyæmia and osteo-myelitis on the seventh day after the operation. It will be seen that the ligature has been almost completely absorbed, and that the artery is occluded in the usual manner by a decolourized fibrinous clot, reaching upwards for about half an inch to the nearest large collateral branch. (*Presented by Professor H. C. Cutcliffe, F.R.C.S., &c.*)

203. "Trees of fibrinous coagula blocking up the branches of the pulmonary artery and veins. From the right lung of a native patient, who died after the operation for scrotal tumour, in which acupressure was imperfectly applied. The tree on the left, marked by a red glass rod, is from a pulmonary vein; that on the right, and marked by a black glass rod, is from the pulmonary artery" (Ewart).

These are both exceedingly common examples of the simple fibrinous clot, so often found in slow death in asthenic cases. Judging from their present size, they could not have "blocked" and scarcely filled either the arterial or venous trunks.

204. "Left lung of the above patient, in which the pulmonary artery and its branches are laid open to illustrate the tree of coagulated fibrin occupying them to their remote terminations" (Ewart).

205. Preparation showing portions of the right femoral artery and vein, removed from the groin, together with a fragment of a malignant growth. The walls of these vessels are seen to be invaded by the growth, and the artery at one spot is ulcerated and laid open. A sudden and severe hæmorrhage from this vessel was the immediate cause of death. On *post-mortem* examination, a few shreds of fibrin were found partially occluding the rent, and there was a soft clot in the femoral vein. The growth so intimately connected with these vessels is a part of a large cancerous (epitheliomatous) mass, which involved the lymphatic glands in the groin, and was apparently secondary in development to an epithelioma of the prepuce and glans penis, removed by operation eight months previously. Soon after amputation of the penis, these lymph glands supplicated, and discharging, left unhealthy ulceration of the skin and subcutaneous structures in this situation (right groin). It was suggested to the patient that a second operation—having for its object the removal of this ulcerating mass—should be undertaken, as it was suspected to be malignant, but he refused to submit to the same. From a European, aged 32. (*Presented by* Dr. D. O'C. Raye, General Hospital.)

206. Atheromatous and calcareous degeneration of the whole of the thoracic aorta, commencing just above the coronary valves. In the ascending portion of the arch are several large, round, "button-like" elevations, and numerous smaller tuberculated growths,—all from atheromatous thickening of the internal tunics. Above this, at the junction of the ascending with the transverse portion of the arch, and involving the root of the innominate artery, is an aneurismal dilatation, the size of half a walnut. The arch then becomes narrower, but is still thickly infiltrated with opaque, soft, and also hard calcareous deposits, the inner surface being greatly roughened. The calcareous change assumes the form of flattened or slightly concave plates of varying thickness, and in numerous situations has the density and feel of bone. The margins of these plates are particularly irregular,

- jagged, and sharp ; the intima in their immediate neighbourhood ulcerated. (*Presented by* Professor Allan Webb.)
207. "Uniform dilatation of the ascending aorta with disorganization of the aortic valves. The lining membrane is rendered uneven by the deposition of atheromatous material. The same kind of degeneration has led to the partial disorganization of the semi-lunar valves. The diameter of the dilated portion is about twice as large as that immediately succeeding it" (Ewart).
208. "Atheromatous deposit and calcareous degeneration underneath and in the lining membrane of the thoracic and abdominal aorta, with extensive erosions of the tunica itself. There is complete occlusion of the trunk of the vessel, just above its bifurcation into the two common iliaes, by organized coagulum" (thrombosis). "From a case of elephantiasis seroti" (Ewart). (*Presented by* Professor Allan Webb.)
209. A portion of the thoracic aorta showing extensive atheromatous thickening of the lining membrane, in the form of smooth, rounded or irregular, slightly raised, and opaque patches, which thickly stud the inner surface, and give it a remarkably uneven and undulated appearance.
210. "The heart and aorta of a native female, in the decline of life, the subject of tertiary syphilis, showing general dilatation, and extensive calcareous degeneration of the entire aorta as far as the coeliac axis. The woman always sat up with her head hanging down, and it was evident that the brain was not duly supplied with blood" (Ewart). The left ventricle is hypertrophied, the aortic valves thickened and rounded at their free margins. Large calcareous plates are seen studding the inner surface of the whole aorta ;—some situated just beneath the lining membrane, others bare, and having soft, granular, fibrinous deposits attached to them. Just beyond the coeliac axis there is a remarkable constriction of the main vessel, a thickened, rounded, firm band stretching across the same ; the abdominal aorta, on the distal side, again exhibiting dilatation and calcareous infiltration. (*Presented by* Professor Norman Chevers.)
211. "Extensive atheromatous and calcareous degeneration of the ascending, arch, descending, and thoracic aorta. In many parts the lining membrane is quite disintegrated. There is considerable dilatation of the ascending aorta" (Ewart.)
212. Atheromatous degeneration of the whole of the arch of the aorta. The lining membrane is covered with opaque-white patches and yellowish calcareous plates, and the ascending portion is dilated. There is hypertrophic dilatation of the left ventricle, and thickening and crumpling of the aortic valves. From a European woman, aged 40.
213. The thoracic and abdominal aorta of a European (male), aged 68, who died from senile debility. The inner surface of the vessel is exceedingly irregular and roughened from extensive atheromatous and calcareous changes. These may be traced down to the origin of the common iliaes. About two inches

above the bifurcation of the aorta, the calcareous infiltration of its coats is most marked, and the calibre of the vessel is also much reduced at this spot. (*Presented by Professor D. B. Smith.*)

214. The aorta of a European (male) patient, aged 35, who died in hospital from uræmia after cholera, showing extensive atheromatous changes. The whole of the inner surface of the vessel is seen studded with soft, dead-white, or yellowish patches, giving an irregular tuberculated appearance to the lining membrane. The ascending portion of the arch is in a state of fusiform dilatation. There is no innominate artery. The right subclavian and right carotid arise directly from the transverse portion of the arch, and by separate orifices, just as the corresponding vessels of the left side. (*"Medical Post-mortem Records," Vol. I, 1875, pp. 501-502.*)
215. The arch of the aorta from a native (male) patient, aged 65, who died from pulmonary phthisis, showing a very highly atheromatous condition of the lining membrane, which is raised into numerous opaque-white and yellowish patches; some soft and smooth, others flattened and calcareous; a few superficially eroded.
216. The heart of a native woman, aged 50, who died from dysentery, showing atrophy and fatty degeneration of the muscular structure, especially on the right side, where the ventricular wall is only a quarter of an inch in thickness. The aortic valves are a little thickened and opaque. The aorta throughout remarkably atheromatous, its inner surface covered with large calcareous plates, many of which are bare, with sharp abrupt margins, and slightly hollowed or concave surfaces.
217. Arch of the aorta exhibiting marked atheromatous thickening of the whole of its interior, especially of the ascending portion, and at the roots of the large blood-vessels in the transverse portion. The patches are soft, smooth, of a dull-white or waxy appearance, and closely clustered—probably syphilitic. There was an indistinct cicatrix on the under surface of the glans penis amygdaloid enlargement of the glands in both groins, and a puckered, cicatricial-like condition of the right lobe of the liver. From an American seaman, aged 34, who died from cholera. (*"Medical Post-mortem Records," Vol. II, 1876, pp. 35-36.*)
218. A highly atheromatous and thickened condition of the arch of the aorta, with, in parts, calcification. From "a native, who committed suicide by hanging" (*Presented by Dr. R. D. Murray, Civil Surgeon, Chittagong.*)
219. Calcareous degeneration of the lower end of the abdominal aorta, and of the common iliac arteries. No history.
220. The whole of the thoracic and abdominal aorta of an East Indian woman, aged 60. The arch of the aorta is dilated, and the entire vessel, as far down as the common iliacs, is extensively diseased. The inner surface is covered with large patches and plates of atheromatous thickening, many in a state of recent

ulceration (acute endo-arteritis), their margins and surfaces presenting a bright-red, highly vascular condition (in the fresh state), with fibrinous vegetations and fungus-like granulations adhering to them. Several of these recent ulcerations of old atheromatous patches are of large size. Those not ulcerated are firm, tuberculated, many calcareous. The aortic valves were rigid, contracted, and calcified; the kidneys small and granular. (See further, "*Medical Post-mortem Records*," Vol. I, 1875, pp. 505-6.)

221. Highly atheromatous and calcareous degeneration of the thoracic and abdominal aorta. The orifices of origin of the large vessels from the arch of the aorta are especially thickened and constricted. At the junction of the transverse with the descending aorta, the lining membrane is seen to be extensively fissured and ulcerated, the muscular coat exposed, and the whole of the structures involved presented, in the fresh state, a highly injected and vascular condition. The calibre of the vessel here is also dilated. This atheromatous and thickened condition of the aorta extends downwards into the iliacs, and even reached the femoral and profunda arteries. From a native male, aged 50, who died from cerebral apoplexy.

222. A portion of the descending aorta, with the common iliac arteries, exhibiting a greatly atheromatous and calcified condition. Large calcareous plates are seen projecting from, or lie imbedded and hollowed out upon, the inner surface of the aorta. There was calcareous degeneration of the coronary arteries, and of the arteries of the extremities (radials, tibials, &c).—From an East Indian (male), aged 81, who died in hospital from dysentery.

223. Extensive atheromatous degeneration of the whole of the aorta, from the arch to the bifurcation into the common iliacs. The inner surface of the entire vessel is rough, undulating, and irregular from the presence of hard, embossed-looking, calcareous patches and plates of varying size. In some places the latter have given way, exposing deep, softened, and eroded surfaces. In other parts, the thickening extends to all the tunics, and renders the wall of the vessel extremely rigid and brittle. The arch of the aorta is fusiformly dilated.

The subject was a German Jew, aged 44, who died in hospital. There was a history of both syphilis and rheumatism. The heart was greatly hypertrophied and dilated, the aortic valves insufficient, &c. (See further, "*Medical Post-mortem Records*," Vol. II, 1877, pp. 529-30.)

224. Extensive atheromatous degeneration of the thoracic and abdominal aorta; in the latter, extending as low down as the origin of the superior mesenteric artery. That portion of the vessel which lies between the diaphragm and œliac axis (in this instance quite two inches in length) is completely calcified, and forms a hard, rigid, unyielding tube. From an East Indian male, who died from idiopathic tetanus. ("*Medical Post-mortem Records*," Vol. III, 1879, pp. 301-2.)

225. The heart of a patient who died in hospital from cerebral meningitis, complicating malarious fever (malarial meningitis). The inner surface of the pulmonary artery presents a series of circumscribed, rounded, raised patches, lying just beneath the lining membrane, which is smooth and entire. They are due to atheromatous changes in the deeper layers of the intima, with sub-epithelial proliferation of the connective tissue composing the same.

226. Heart showing extensive endocarditis of the right chambers, with fusiform dilatation and inflammatory thickening of the pulmonary artery.

The heart is greatly enlarged, especially its right cavities. These are much dilated, the muscular tissue being, as it were, dissected out, and, at the apex of the ventricle, and more or less throughout the auricle,—thinned. The right auriculo-ventricular opening admits five fingers. The tricuspid flaps are partially conjoined, and their chordæ tendineæ thickened, so that the three portions of this valve are not distinct. In the auricle, the opening of the coronary sinus is large enough to admit the tip of the forefinger. Both cavæ (superior and inferior) are large and dilated. The endocardium lining the right ventricle—especially over its anterior wall—is enormously thickened, quite leathery in consistency, rough, and corrugated. The pulmonary orifice is very wide; its valves malformed, and quite incompetent. The right valve is thin and stretched; the central valve has almost disappeared. It forms a tightly-stretched, semi-transparent band across the pulmonary orifice; and the wall of this vessel (pulmonary artery), immediately above it, is aneurismally dilated to the size of half a walnut. The left valve lies on a lower level than the other two, its left half thin and stretched, its right thickened, flattened, and forming a prominent transverse ridge across the pulmonary orifice. The pulmonary artery is extensively diseased, its coats are thick and leathery, fully equalling those of the normal aorta; its inner surface is rough, opaque, irregularly thickened, and forms an hour-glass-like dilatation,—a constriction occurring about two inches above the pulmonary orifice, where normally this vessel divides into its right and left branches. The lower dilatation takes the form of a huge bulbar expansion, measuring five and a half inches at its greatest transverse diameter. The upper dilatation (*i.e.* above the constriction) is rather smaller, measuring five inches transversely at the widest part. The inner surface of this upper dilatation is greatly corrugated or wrinkled. The foramen ovale is closed; the ductus arteriosus obliterated. The left cavities of the heart are small in comparison with those of the right; their muscular walls are of about normal thickness. The mitral and aortic valves and the lining membrane of the aorta show nothing abnormal in their structure.

The aortic orifice does not seem to be unusually contracted, nor the calibre of this vessel reduced. From the arch four branches were given off. The right subclavian and right common carotid

arteries, like the corresponding left vessels, took their origin directly from the arch : there was no innominate artery.

This preparation was taken from the body of a Hindu, named Khettur, aged 38, a blacksmith by occupation. He was admitted into the College Hospital on the 6th April 1877, and died on the 15th of the same month. There was a history of both rheumatism and syphilis (scar on penis, and rupial stains on the skin of the neck, and over the left clavicle), and he had led an intemperate and debauched life ; was given to both opium-eating and ganjali-smoking. Two years previous to admission, first experienced pain in the chest, and began to suffer from cough and dyspnœa. Palpitation and general anasarca of the body only complained of and noticed within the last two months.

The patient was bloated-looking ; there was general anasarca (ascites, &c). The area of the heart's dulness much increased, the cardiac impulse imperceptible, and the sounds of the heart feeble and distant. A soft systolic bruit was heard at the apex, and conveyed a short distance to the left (not to the angle of the scapula). No bruit at the base over aorta or pulmonary artery. The jugulars were prominent, full, and pulsating. The conjunctivæ were jaundiced ; the urine high-coloured and scanty. Vesicular respiration masked all over both lungs by loud sonorous and sibilant sounds, and large moist crepitation at the bases posteriorly. Decubitus dorsal. Complained of pain in the head, giddiness, and a tendency to faint if standing erect or on attempting to walk. Pulse very small and feeble.

The dyspnœa was relieved and the anasarca diminished during the first week after admission. On the evening of the 14th, however, the former became more pronounced, but during the night subsided. On the morning of the 15th he was decidedly better, but at 10 A.M. a sudden change seemed to have occurred—probably increased effusion into the pericardium—and he died very rapidly after a few gasping, ineffectual respirations. The pericardial cavity was found, on *post-mortem* examination, to contain nearly two pints of dark straw-coloured serum. The heart with its covering occupied the whole of the space exposed by removing the sternum, forming a mass the size of the adult head. (*See further, "Medical Post-mortem Records," Vol. II, 1877, pp. 403-4.*)

227. Calcification of the arteries of the right upper extremity.

228. The same condition of the vessels of the left upper extremity—axillary, brachial, ulnar, radial, and anterior interosseous arteries. Both the above preparations were taken from a native woman, aged about 40, who died from encephaloid carcinoma of the uterus. Almost all the arteries of the body were similarly affected.

229. Annular, and almost complete calcification of the arteries of the right lower extremity. The common, external, and internal iliacs, the femoral and tibial arteries are represented.

230. A similar condition of the arteries of the left lower extremity.

Both the above preparations were taken from the body of the same patient as Nos. 227 and 228. (*See further also, "Medical Post-mortem Records," Vol. I, 1873, pp. 288-89.*)

231. The right and left femoral and anterior tibial arteries, showing almost complete calcification, chiefly annular, but in parts quite tubular in character. The coats of these vessels are very rigid and friable. This condition was also met with in the posterior tibials, in the spermatic and coronary arteries, but not in the vessels of the upper extremities. From a European (male) patient, who died in hospital from Morbus Brightii. (*See further, "Medical Post-mortem Records," Vol. III, 1880, pp. 677-78.*)

232. Calcareous degeneration of the mesenteric arteries, a few of which have been dissected out and laid open to exhibit the altered condition of their walls.

Taken from the same case as Nos. 227-230.

233. The abdominal aorta, from an inch above its bifurcation, with the external, and the trunks of the internal iliac vessels, the right femoral with trunks of the profunda and popliteal arteries, taken from a man who died from extensive gangrene, involving the whole of the right leg and the lower third of the thigh. "The body was injected with dark-coloured injection, which permeated all the vessels of the unaffected or left side. It also entered the right internal iliac, which was nearly twice the size of the corresponding vessel on the opposite side. But no injection passed into the external iliac of the affected side, which, with the femoral, profunda, and popliteal, were contracted and cord-like to the touch. These vessels are opened, displaying a cord of organized fibrin, extending their whole length. This was firmly adherent to the lining membrane; it completely blocked up the vessels. A similar state of things doubtless existed in the principal vessels of the leg" (Ewart). (*Presented by Professor J. Fayer.*)

234. "Enormous dilatation of the arch of the aorta. * * * * * The aorta is so much dilated at the summit of the arch as to be equal to four fingers in breadth. It decreases again towards each extremity of the arch, forming a sort of fusiform aneurism. The internal coat is very extensively diseased, puckered, and studded with cartilaginous, bony, and steatomatous deposits. The left carotid and left subclavian are contracted by the thickening of their coats. The pericardium was found universally adherent. From a European sailor, aged 34, who was a very hard drinker, and died of dysentery." (*Webb's Pathologia Indica, No. 754, p. 15.*)

235. "Aneurism of the ascending aorta, from a native. The sac of the aneurism is opened. Its cavity is large enough to admit the grasped hand. The dilatation begins from about an inch above the semi-lunar valves, and extends to within the first half of the arch. The external portion is adherent to the internal portion of the sternum, which, in one part, about as large as a walnut, it has completely perforated. There is between the

aneurismal cavity at this part and the integument only areolar tissue, thickened and altered by organized exudation. Some relics of concentric layers of fibrin are seen on the wall of the sac just underneath the portion of the sternum which has been preserved" (Ewart). (Webb's *Pathologia Indica*, No. 1674, p. lv.) (Presented by Dr. Oxley, of Singapore.)

- 236.** Aneurism of the ascending portion of the arch of the aorta, about the size of a small orange, originating immediately above the coronary valves, which appear to be somewhat stretched, but not otherwise abnormal. The aneurism has expanded towards the left, its most projecting portion being directed towards the left auricle, to the surface of which the sac is firmly adherent, and into the cavity of which it opens by means of a smooth-margined orifice, admitting the tip of the little finger, situated just below the fossa ovalis. The inner surface of the sac, which appears to be formed by the dilatation of all the coats of the aorta, is peculiarly puckered or wrinkled. It shows no trace of any fibrinous deposit.

The subject was a European seaman, lately arrived from England. He died in hospital from pneumonia, about six weeks after admission. (See further, Webb's *Pathologia Indica*, No. 871, pp. 27 and 43.) (Presented by Professor J. Jackson.)

- 237.** Aneurismal dilatation of the ascending portion of the aorta, with the formation of an aneurismal tumour at the outer and superior aspect of the junction of the ascending and transverse portions. The tumour is about the size of a walnut; it opens into the general dilatation of the vessel by an orifice rather larger than an eight-anna piece, having a rounded, smooth margin. Another aneurism, rather smaller and more flattened, projects directly backwards from the upper part of the arch, being situated about an inch below and behind the root of the innominate artery. This has an orifice of communication rather larger than a rupee. The whole of the inner surface of the aorta is rough and thickened, in parts, studded with calcareous plates. Describing this preparation, Dr. Webb says:—"The aneurismal sac springing from the root of the aorta increased in a direction upwards and backwards till it attained the size of a closed hand. Now, its progress being arrested by the root of the neck, it could only obey the law of increase by insinuating there a small secondary cyst. The neck of this secondary sac still bears marks of the constriction it had undergone. By its weakness it gave way to the arterial impetus, and its laceration produced death." (*Pathologia Indica*, No. 250, p. 2.)

- 238.** A preparation exhibiting (1) an aneurism, the size of a walnut, in the ascending aorta, projecting towards the right; much flattened, and partially obliterated by pressure from (2) another large aneurism situated above it, at the junction of the ascending and transverse portions of the arch, involving the whole of the innominate artery, and the roots of the right subclavian and right common carotid arteries. This aneurism is the size of an orange; it communicates with the aorta by an

oval-shaped orifice, an inch in length and half an inch wide. The sac appears to have extended upwards to a point about midway between the origin and bifurcation of the common carotid, and here to have ruptured, the extravasated blood forming for itself a second sac—the size of a hen's egg—by the condensation of the connective and other soft tissues at the root of the neck around it. Thus, two aneurisms, one springing directly from the arch, the other a “diffuse aneurism,” are seen situated one above the other, with a narrow neck between them, presenting an hour-glass-like condition. (3) Two small aneurisms—each about the size of a hazelnut—project backwards directly from the posterior wall of the aortic arch, one presenting just between the right bifurcation of the pulmonary artery and right bronchus; the other impinging upon the left bronchus at the division of the trachea. This little tumour is half-filled with laminated coagulum. (4) Along the anterior wall of the arch are three or four small, shallow, aneurismal dilatations of the coats of this vessel.

The largest aneurism exhibits a considerable deposit of stratified fibrin in its interior, especially along the inner and posterior wall. The innominate, right subclavian, and right carotid arteries appear to be almost completely obliterated; the last is filled with pretty firm coagulum as far as the point where it was ligatured during life. Every portion of the lining membrane of the aorta is thickened, rough, and in parts calcareous. A portion of the anterior wall of the arch has been cut away in order to show the origins of the various aneurisms above described.

Case of Mr. T., aged 42. The tumour, when first seen, was “about the size of a pigeon's egg, situated at the right clavicle between the two origins of the sterno-cleido-mastoid muscle.” It had all the characters of an aneurism, and was diagnosed as involving the root of the right common carotid artery, which it was proposed to ligature, but apparently the operation was refused by the patient. About a fortnight after, the latter having “exerted himself violently at the dockyard the whole of the previous day, the tumour became increased to treble its former size. Instead of being confined to the lower part of the neck, it was as high as the thyroid cartilage, and pulsated with great force; it was excessively tender to the touch, and the skin over it was red and inflamed.” There was distressing dyspnoea and restlessness, and the patient now expressed great anxiety to have the operation performed. This was done the following morning, a ligature being placed over the right common carotid artery, “about three-quarters of an inch below its bifurcation.” There was no change in the size of the tumour after the operation, but the pulsation in it was evidently less distinct. After a lapse of three days, no material alteration having taken place in the aneurism, its pulsation, on the contrary, becoming stronger, galvanism was resorted to, and the needles introduced “at different places,” on two successive days, with the result of producing decided hardening of the tumour and considerable relief

to the patient. About a week after, however, he died suddenly. Having "got off his couch, he attempted to walk across the floor to one of his children, who was crying, he fell on his face, and when he was raised (almost immediately) he was found to be dead. He had not made the slightest struggle before expiring. The tumour in the neck was much smaller, and the skin over it loose and flabby, so that it was certain the aneurism had burst internally." (From notes by Professor R. O'Shaughnessy, who presented the preparation to the museum. (See further, Webb's *Pathologia Indica*, No. 254, pp. 5 and 8.)

239. An aneurism, about the size of the closed fist, springing from the anterior superior aspect of the arch of the aorta, at the junction of its ascending and transverse portions. The sac extends from the clavicle to the fourth rib, "making its way to the outside of the chest by destroying its walls and bursting in this direction. Its walls are whitish, consolidated, and smooth. An attempt has been made to heal the breach in the sac by the effusion of recent coagula. Aneurism of long standing, heart large, right ventricle enormously hypertrophied, left dilated, covered by adherent pericardium." (Webb's *Pathologia Indica*, No. 378, p. 5.)

"When the preparation is examined from behind, the adhesion of the sac to the inner wall of the chest is well demonstrated. So is the somewhat irregular sacculation of the aneurism. Viewing it from in front, the jagged sac lined with recent lymph at the point where rupture took place, the complete absorption of a portion of the right side of the sternum, just below the sterno-clavicular articulation, and of the corresponding two ribs are beautifully illustrated" (Ewart).

240. Aneurism of the ascending portion of the aorta, springing from its outer aspect, and attaining the size of a large orange. The whole of the ascending portion of the arch is dilated, but the transverse and descending portions are of about normal calibre. "The walls of the sac are about a sixth of an inch in thickness, and uniformly lined with a thin lamina of organized fibrin. The internal coat is destroyed, the parietes being made up of the attenuated middle tunic and the greatly thickened cellular coat. The heart is enormously hypertrophied, and the pericardium greatly thickened and adherent by tolerably recent adhesions" (Ewart). The aneurism has progressed outwards to the right, and also slightly backwards, the sac extending for about two inches behind the transverse portion of the aortic arch. (*Presented by Professor Allan Webb.*)

241. "Aneurism of the ascending aorta, with dilatation of the transverse portion. A section of the sac is presented. The sternum and ribs over it are preserved. The diameter of the sac from above downwards is fully six inches, and diagonally or antero-posteriorly four inches. The great bulk of the sac is projecting towards the anterior part of the chest, to which it is seen to be very firmly adherent. Its internal surface is very irregular, and

in some places contains shreds of lymph" (? fibrin). "From a native." (Ewart). (*Presented by* Professor S. B. Partridge.)

242. An aneurism, rather larger than a walnut, arising from the outer aspect of the ascending portion of the arch of the aorta, and extending outwards, backwards, and a little downwards, finally opening into the pericardial cavity by a smooth-margined, rounded orifice, sufficiently large to admit a crow-quill, situated on the left side of the root of the aorta, just beneath the reflection of the pericardial membrane. The orifice of communication of the aorta with the aneurism is smooth, rounded, and about the size of a four-anna piece. The sac is partly filled with coagulum. The right coronary artery may be traced along the floor of the aneurism, and is apparently quite occluded. The left coronary artery is of large size and distributed normally. The two layers of pericardium were united irregularly by old adhesions, and therefore their separation by the extravasation of blood from the aneurism must have been gradual. (*Presented by* Dr. Evans.)

243. Aneurism of the ascending portion of the aorta, with general dilatation of the transverse portion. An aneurismal tumour, about the size of the closed hand, is seen projecting forwards and to the right behind the sternum and first four ribs. The sac is almost filled with stratified, firm fibrin. Anteriorly, it is very thin, but laterally, thick from condensation of the surrounding soft tissues. In the former situation it is seen to present in the interspace between the second and third ribs, forming a rounded prominence here, and leading to the absorption of these two ribs, and a portion of the right margin of the sternum. The reason for such an abundant filling-up of the tumour by laminated fibrin appears to be that as the aneurism grew, it came to press upon the aorta itself at its root, thereby narrowing the aortic orifice, and causing a diversion of the current of blood upwards and to the right, so as to dilate the transverse portion of the arch, while comparatively a much smaller amount of blood than in the normal state entered the ascending portion and its aneurism. The whole of the aorta is highly atheromatous.

Case of William Butler, an American (coloured) seaman, who "stated that the disease originated from severe exertion in pulling some ropes in a heavy squall at sea, about three months ago. He felt at the time as if something gave way under the axilla." He was treated by rest, repeated leeching and morphia. Died from dysentery about nine weeks after admission into hospital. (*See further, Webb's Pathologia Indica, No. 671, pp. 5-6.*) (*Presented by* Professor J. Jackson.)

244. Aneurism of the ascending portion of the aorta, rupturing into the pericardium. The aneurism is about the size of a hen's egg, arises from the intra-pericardial portion of the aorta, communicating with its anterior wall by an orifice of irregular outline, the size of a four-anna piece. The sac projects forwards and downwards, is intimately adherent to the reflected pericardium

above and in front, and is here thickened also by the deposit of laminated coagulum upon its interior; but below, to the right of the origin of the pulmonary artery, it is very thin, and at this spot has ruptured into the pericardial cavity. The latter, in the preparation, is seen filled by a large coagulum of blood, closely moulded to the heart's surface. (No. 121, p. 28, Webb's *Pathologia Indica*.)

245. Aneurism of the arch of the aorta. No history. A tumour, as large as the foetal head, consisting of a fusiform aneurismal dilatation of the ascending and transverse portions of the aortic arch. It ascends upwards into the neck as far as the lower border of the thyroid cartilage, and by pressure upon the trachea has induced perforation,—a minute opening, capable of just admitting a thick bristle, being seen between the eighth and ninth rings of the windpipe. The sac also projects anteriorly, and had apparently contracted intimate and firm adhesions with the first piece of the sternum, for an irregularly rounded and ragged opening is observed on its anterior aspect, where a portion of its structure seems to have been torn away in removal. The dilatation which affects the ascending portion of the arch is separated by a slight constriction from that involving the transverse portion, but essentially they are continuous, and all the coats of the vessel participate in the fusiform expansion thus produced. The innominate is compressed and narrowed, but not involved in the aneurism. The left carotid is completely plugged and impervious. The left subclavian large and dilated. The orifice of origin of the former is seen at the upper part of the sac; the latter arises just beyond it. The whole of the aneurism is filled with coagulum; that towards the periphery is very firm and stratified.
246. "Aneurism of the arch of the aorta, which burst externally through the sternum." The aneurism projects from the anterior aspect of the sternum as a growth, the size of two fists, rounded and broad at the base, conical towards the apex. A portion of the integument has been left, showing the part where rupture took place. The opening is about the size of an eight-anna piece, and the skin here is very thin, ragged, and undermined. The sac is very large, and has an hour-glass shape. That portion within the thorax is the size of an orange, and projects from the anterior aspect of the arch at the junction of the ascending and transverse portions. It has a well-defined, circular orifice of communication (about two inches in diameter) with the generally dilated arch. The portion extra-thoracic has perforated the manubrium, about two inches below the episternal notch, and to the right of the mesial line. The sac here has become diffuse, *i.e.* is formed not only by the thinned, stretched, and ruptured coats of the vessel, but also involves the subintegumental connective tissues. The whole of this extra-thoracic portion is filled with laminated fibrin, and the greater portion also of the intra-thoracic expansion. No history.

[Glass rods have been placed in the preparation to show, *1st*, the orifice of communication of the sac with the aorta, and the sacculated character of the intra-thoracic portion of the aneurism; and *2ndly*, the generally dilated and highly atheromatous condition of the rest of the arch,—from which the brachio-cephalic vessels arise.]

247. "Aneurism of the ascending aorta, with hypertrophy and dilatation of the left ventricle. The aneurism springs from the anterior and right side of the aorta, immediately above the valves, and extends downwards, forwards, and to the right towards the right auricular appendix, which it touches. The heart has been opened from behind, and the walls of the left ventricle are held apart by a glass rod" (Colles).

The aneurism is of the sacculated variety, and as large as a duck's egg. Its inner surface is rugose and highly atheromatous, and the whole arch presents similar conditions. The sac is empty,—contains no fibrinous deposit. The aortic valves are inefficient, thickened, and crumpled, the middle valve in particular.

248. "Enormous aneurism springing from the arch of the aorta, close to the origin of the arteria innominata. It communicates with the aorta by an oval opening, nearly an inch and a half long by half an inch wide. The sac is bounded in front by the cartilages of the ribs and the upper portion of the sternum. The osseous tissue of the latter has been completely absorbed in the centre, nothing being left but the periosteum and fascia. The sac has bulged up into the neck as far as the larynx, thrusting the thyroid gland and trachea so far to the right side that the latter lies behind the right subclavian artery. Both the right subclavian and right carotid have been also thrust over to the right, so that the latter lies to the outer side of the pneumogastric nerve, while the internal mammary runs almost horizontally inwards from the former to reach its proper place on the wall of the chest.

The left ventricle of the heart and the *posterior* surface of the ascending aorta have been laid open. The sac has been opened on the left side, and its walls kept apart with glass rods. The cervical portion of the sac has been torn in two places" (Colles).

249. "Large aneurismal dilatation of the ascending aorta, with atheromatous degeneration of the arch and descending aorta. The aorta is full of patches of calcareous degeneration, many of which are as large as finger-nails. The ascending aorta, from its origin to that of the arteria innominata, is dilated into a sac capable of holding six or seven ounces of fluid. All the coats are equally involved; there is no tendency to "point." The sac in its upper and right aspect, where the great aortic sinus would be, contained a decolourized coagulum, now much shrunk (retained *in situ* by a couple of stitches). This lay loose in the cavity: there was no laminated adherent coagulum. The patient, a European, was admitted, 35 days before death, with obscure symptoms, supposed to indicate hepatic abscess. Some small cicatrices were found in the liver" (Colles).

- 250.** Aneurism of the ascending portion of the arch of the aorta. The sac is the size of a Tangerine orange, lies below, to the right, and also a little in front of the innominate artery, which is not involved. It is partially filled with laminated coagulum, and formed chiefly by the outer or fibrous tunic of the aorta. The whole of this vessel is diseased—atheromatous. “Death took place from rupture.” (*Presented by Dr. T. R. Lewis, Presidency General Hospital.*)
- 251.** Fusiform aneurism the size of a large pomegranate, implicating the ascending and transverse portions of the arch of the aorta. Death was caused by the sudden rupture of the sac into the pericardium, at a spot situated about an inch and a half from the root of the aorta, in the cul-de-sac formed by the visceral layer of the pericardium on being reflected to form the parietal layer. The aneurism contained some solidified, laminated, fibrinous deposit towards its outer part, and a coagulum of semi-decoloured blood, the size of a hen’s egg, was found loose in its cavity. The whole of the lining membrane of the expanded arch is thickened, rough, and in some parts tuberculated, and even calcareous from atheromatous changes. At the superior and outer portion of the aneurism the sac is thinnest, and was firmly adherent to the under surface of the manubrium, where the bone was denuded of periosteum and hollowed out to the depth of about a quarter of an inch. At the anterior inferior boundary of the aneurism is seen the rent through which it burst into the pericardium. This opening readily admits one finger, is oval in shape, its margins ragged and thin. In the recent state, a small fresh clot was found temporarily plugging it. The descending aorta is throughout thickened by atheromatous deposit: the same condition extended as low down as its bifurcation into the common iliaes. About two inches below the origin of the left subclavian artery, *i.e.* at the commencement of the descending aorta, a small, partial dilatation of the vessel is seen. The aortic valves were fairly healthy; the inferior flap of the mitral slightly thickened. The left pneumogastric and recurrent laryngeal nerves were found compressed and flattened; the latter seemed to become lost on the posterior surface of the sac. The left ventricle is hypertrophied.
- 252.** Preparation exhibiting a large aneurism of the innominate artery and arch of the aorta. During life, the tumour produced a distinct prominence of the anterior wall of the thorax, at the first right intercostal space, close to the upper part of the sternum; and, after death, the manubrium was found hollowed out into a large cup-shaped cavity; the bone denuded of periosteum, and so much thinned as to be almost translucent. The aneurism seems to have sprung from the junction of the ascending and transverse portions of the aorta, and to have involved, more or less completely, the whole of the arch. The walls of the ascending portion are enormously thickened. The sac has also very thick and dense walls, except where adherent to the chest wall (anteriorly). The origins of the right common carotid and

subclavian arteries, as well as the whole of the innominate artery, are involved in the aneurism; the left carotid and subclavian appear to be quite free. The right subclavian was found greatly displaced backwards, towards the spine. The inner surface of the sac was lined by several superimposed layers of firm, decolourized fibrin. The left bronchus is compressed, and the whole of the left lung was found collapsed. The mucous membrane of the trachea, about two inches above the point of bifurcation, and to the right of the mesial line, is seen to present three small, transverse, clean-edged ulcers, one above the other, exposing the corresponding cartilagenous rings. The tumour seems to have pressed considerably in this direction. The left ventricle of the heart is hypertrophied. The aortic and mitral valves are slightly thickened and opaque.

The specimen was taken from a Hindu, named Gokool, aged 40. He had syphilis at about the age of 25, and was addicted to opium-eating and ganjah-smoking. The alleged cause of the disease was a severe strain received at the upper part of the chest, about a year previous to his admission into hospital, while lifting a heavy load of cloth on to his head.

There was an oval swelling, about three inches in diameter, situated immediately below the clavicle and encroaching upon the right margin of the sternum. Pulsation was faintly visible, but felt distinctly on palpation. This part was dull on percussion. The heart's impulse was strongly transmitted through it, but no bruit was heard over the tumour, only a strong, rasping murmur at the ensiform cartilage. The patient was much troubled with a frequent metallic cough, but his voice was not affected.

253. Aneurism of the ascending portion of the arch of the aorta, the size of a foetal head, directed downwards, backwards, and to the right. It is distinctly sacculated, the orifice of communication with the aorta being well defined, and marked by a rounded, opaque, thick margin or lip about three inches in diameter. The sac is lined by a large amount of dense, laminated fibrin; such portions as remain uncovered exhibit a thickened, atheromatous and even calcareous condition. There is also much thickening of the sac externally by new growth of fibrous tissue, in which were traced numerous, small, ramifying blood-vessels. The superior cava has been considerably compressed and displaced downwards and backwards. The transverse portion of the arch shows extensive atheromatous thickening and calcification. This is especially marked around the points of origin of the large arteries springing from it. The mitral and aortic valves are thickened and yellowish-white in appearance. The left ventricle is hypertrophied. The external surface of the heart loaded with fat.

254. Preparation showing a large sacculated aneurism of the arch of the aorta, situated at the junction of the ascending and transverse portions. The heart and aorta, trachea and bronchi, as also the whole of the middle lobe of the right lung (to which the sac is strongly adherent) are all preserved *in situ*. The

aneurism is about the size of one's fist, and occupied the greater part of the anterior and middle mediastina. It filled the second and third intercostal spaces, and was here adherent to the costal cartilages and right half of the sternum. The heart was displaced considerably downwards, and to the left. The whole of the aorta is thickened, but especially its ascending and transverse portions. At their junction, an orifice is seen, somewhat larger than a rupee, with well-defined, abrupt, thickened edges, leading into the aneurismal sac. The latter is formed by the external tunica of the aorta only, but is much thickened by adventitious adhesions from the surrounding tissues. From its point of origin, it extended upwards and backwards to the right. It also passed for a short distance behind the arch, between it and the trachea, and here it is seen that the right bronchus, close to the tracheal bifurcation, is much flattened and compressed. The aneurism was found about half-filled with coagulum, chiefly dark and soft. The innominate artery is not involved; it arises above and in front of the sac; and for the same reason, the left common carotid and left subclavian vessels are free and healthy looking. The pulmonary artery was firmly fixed to the aorta, and somewhat compressed. The innominate veins and superior vena cava were also displaced and compressed. The muscular tissue of the heart is exceedingly soft and flabby.

The specimen was taken from a Hindu (Gopal), aged 35, who died in hospital. (*See further, "Medical Post-mortem Records," Vol. II, 1876, pp. 283-84.*)

- 255.** A fusiform aneurism of the arch of the aorta, from a European, aged 49, an indigo-planter. The ascending portion of the arch is expanded so as to constitute a fusiform, true aneurism, the size of one's fist. It was found filled with soft blood-coagulum, and only at one spot, at the highest part of the aneurismal sac, over a limited space, about the size of an eight-anna piece, was there any attempt at the deposit and lamination of fibrin. The entire inner surface of the arch is thickened, rough, corrugated, and raised in smaller and larger, soft, opaque-white patches, interspersed among which are a few small calcareous scales or plates. The aneurism is constituted by all the coats of the aorta. Its external surface is much thickened by adventitious adhesions with the connective and other tissues in the anterior mediastinum. The orifices of origin of the vessels springing from the arch are all a good deal thickened; that of the innominate is also dilated to a considerable extent. A fourth branch, the left vertebral artery, is seen to arise from the arch between the left carotid and subclavian arteries. The left ventricle is hypertrophied, its walls fully an inch in thickness. The endocardium and valves are opaque; the aortic valves quite insufficient. The right cavities are in a state of hypertrophic dilatation. (*See further, "Medical Post-mortem Records," Vol. II, 1877, pp. 359-60.*)

256. A preparation showing a fusiform aneurism of the arch of the aorta, involving the ascending and transverse portions. "It occurred in a prisoner in the jail, who was admitted into the hospital directly after his conviction with symptoms of chronic bronchitis. It was noticed that his respiration was noisy, but how far feigned and how far real could not be made out. Under treatment he improved, but was suddenly found one morning worse than ever. His respiration was more noisy, skin cold, and the breathing short and hurried. It was diagnosed that he was suffering from some obstruction in the air-passage, produced by sudden supervention of œdema glottis, or some narrowing of the windpipe at its upper part by acute laryngitis. Tracheotomy offered the only chance of relief, and accordingly it was performed. The man confessed to some relief, but still the noisy respiration continued, and he gradually sank the next day. In the *post-mortem* room an aneurism of the aorta was detected. The dilatation was in the course of the vessel, and was even on all sides. There was no diverticulum to speak of, and the contents of the aneurism were fluid. There was no bruit with the heart's sounds. The aneurism pressed upon the bifurcation of the trachea, and flattened out the rings. Besides, the laryngeal nerve will be seen descending behind the trachea, and the recurrent branch very much compressed. The operation relieved only the reflex symptoms, but the obstruction still continued. There is a calcareous plate on the wall of the aneurism on the point of softening, and would have communicated with the trachea if the man had lived a few days longer. He was a confirmed subject of syphilis, and had adhesion of the pericardium to the heart, as well as of the lungs to the pleuræ."

The specimen consists, as above described, of a fusiform aneurism of aortic arch. It is about the size of the closed fist. In the windpipe (also preserved) may be seen (1) the opening made by the operation of laryngo-tracheotomy,—just below the thyroid cartilage; and (2) the point at the bifurcation of the trachea where the aneurism so nearly gave way,—the sac here being so thin as to have actually ruptured in mounting the preparation. (*Presented* by Dr. G. C. Roy, Civil Surgeon, Beerbhoom.)

257. Aneurism of the aorta. The whole of the arch is highly atheromatous, and covered with large opaque patches and calcareous plates. The ascending portion is fusiformly dilated. About an inch and a half above the aortic valves (which are thickened, crumpled, and inefficient) is the orifice of a sacculated aneurism, about the size of an eight-anna piece. The sac is only partially, and for but a short distance beyond the mouth, composed of all the coats of the aorta. It is the size of a small orange and firmly adherent to the sternum, the upper portion of which is hollowed out and greatly absorbed, so that the aneurism projects beneath the soft parts on the anterior aspect of the thorax, and here forms an ovoid tumour, the size of one's fist. The skin and subcutaneous tissues are also much

thinned from pressure, and at one spot (indicated by a glass rod) have given way, the sac virtually rupturing externally, and probably thus leading to a fatal termination. No history.

- 258.** Triple aneurism of the aortic arch. The first is the size of half a walnut, arises from the ascending portion, half an inch above the coronary valves, and is contained within the aortic reflexion of the pericardium. The sac is thin, formed chiefly by the outer fibrous coat, and has given way at one spot (indicated by a glass rod in the preparation), blood being extravasated into the pericardial cavity. This extravasation was probably slow, allowing time for the pretty firm coagulation of the blood, which in successive layers is seen surrounding the greater portion of the heart, and is accurately moulded to its outline.

Above this is a second aneurism, or aneurismal dilatation of the arch, at the root of the pulmonary artery, projecting forwards and to the right.

Just below the origin of the left common carotid and subclavian arteries is the third aneurism, well-defined, sacculated, springing from the anterior aspect of the transverse portion of the arch. It communicates with the latter by a smooth-margined, rounded orifice, rather larger than an eight-anna piece. It is the size of a small orange. The inner and middle coats of the aorta are ruptured a little beyond the mouth of the sac, and the latter is thus formed by the outer or fibrous coat only.

The inner surface of the whole of the aorta is greatly thickened and atheromatous. (Webb's *Pathologia Indica*, No. 256, p. 5.)

- 259.** General dilatation of the ascending portion of the arch of the aorta with the formation of an aneurism, the size of a pigeon's egg, at the upper and back part of the arch, just below the origin of the innominate artery. The sac is formed by all the coats of the vessel. Its mouth is rounded and about the size of an eight-anna piece. It projects backwards and to the left, impinging upon the trachea, to which it is firmly united, and bulges into the interspace between the trachea and the left common carotid artery. The trachea, about two inches above its bifurcation, is perforated by the aneurism,—an opening capable of admitting a crow-quill, with sharp, clean-cut edges (indicated by a glass rod). A fatal termination was thus induced. The sac is half full of coagulum. The innominate artery is greatly dilated, and so also are the right subclavian and right common carotid. The lining membrane of the innominate is thick and atheromatous; at one spot dilated so as to form a little aneurism, the size of a hazelnut, directed towards the median line. The left common carotid is a good deal narrowed at its origin; the left subclavian wide and dilated throughout. Between these two a small artery is seen, arising directly from the arch, and of about the calibre of an ordinary radial. It is probably the left vertebral.

- 260.** A peculiar sausage-shaped aneurismal dilatation of the arch of the aorta. The anterior portion forms a sacculated aneurism projecting forwards, and intimately adherent to the manubrium opposite

the articulation of the first rib. The sac here is very thin, and constituted by the external coat only, the inner and middle being found ruptured just beyond the mouth of the aneurism, which is rounded and about in inch an diameter. The posterior dilatation is a fusiform expansion of all the coats of the vessel, reaching backwards so as to impinge upon the left side of the dorsal vetebræ, to which it is adherent. A portion of the left lung is also seen to have intimate connections with the sac.

261. "Aneurism of the arch of the aorta of a European male, opening into the œsophagus at the point now marked by a black glass rod." The aneurism is about the size of a walnut, flattened from before backwards. It arises from the upper and back part of the transverse portion of the arch, immediately below the origin of the left subclavian artery. Its orifice of communication with the aorta is rounded, but rough, and rather larger than a four-anna piece. The inner and middle coats have given way just beyond the mouth, the sac being formed by the external fibrous tunic only. It is partially filled with firm laminated fibrin. The whole of the ascending and transverse portion of the arch exhibit fusiform dilatation and atheromatous thickening of the walls. The left subclavian artery is compressed and narrowed. The trachea, half an inch above its bifurcation, shows the same condition, and, at one point, indicated by a red glass rod, exhibits thinning and commencing disintegration of the mucous membrane from pressure of the aneurism.

"Death did not result from hæmorrhage, although a little blood was spat up, but from pressure upon the trachea, and consequent suffocation. The fatal attack of asphyxia was preëpitated by a drinking-bout." (*Presented by Professor Norman Chevers.*)

262. "Dilatation of the ascending aorta, and aneurism of the transverse portion of the arch, springing from each side of the arteria innominata. The sac is directed upwards and forwards, is firmly adherent to the parts at the root of the neck and the interior aspect of the sterno-clavicular articulations, at which points the pressure from within has led to absorption of the osseous and soft structures, allowing the emergence of the aneurism, and the formation of a pulsating tumour in this situation" (Ewart). (*Presented by Professor R. O'Shaughnessy.*)

263. "Aneurism of the aorta. The aneurismal sac is seen springing from the transverse portion of the arch; in shape it bears a strong resemblance to a small heart. It occupies the anterior mediastinum, its base being on a level with the upper border of the sternum, its apex corresponding with the upper border of the third rib, keeping the centre of the sternum. It appears to be of old standing, the walls are thick, firm, and white. No thinning of the bone seems to have taken place, and the dysentery of which the man died has so reduced him as to admit of the sac being filled with firm coagula of blood, excepting a small part of the centre. The descending portion of the aorta, and ascending portion also, are partially obstructed with coagula

the innominata, its branches, and left carotid, are completely closed, an effort having been made, during the existence of this low state of the system, for the entire cure of the aneurism by plugging up the principal vessels in the neighbourhood with coagula (Brasdor's principle). From a European seaman, aged 40," admitted into hospital on the 3rd July 1842, and who died from dysentery on the 5th September following. The aneurism is the size of an orange, and springs, strictly speaking, at the point of junction of the ascending and transverse portions of the aorta, involving both. Its interior is filled almost completely with firm, decolourized, stratified coagulum. At the central part a hollow is left, which can be distinctly traced to a tunnelling of the clot in the aneurism by the stream from the aorta, so that practically the tumour itself was quite consolidated. The plugging of the innominate, right and left carotid arteries, and right subclavian is well seen. (*See further, Allan Webb's Pathologia Indica, No. 658, pp. 4 and 10.*) (*Presented by Professor J. Jackson.*)

- 264.** An aneurism of the transverse portion of the arch of the aorta, about the size of a duck's egg. It involves the anterior wall and floor of the aorta; in the latter situation, it is seen to have burrowed to the right by separating the internal and middle from the outer fibrous tunie, and has thus reached the ascending portion of the arch, into which, however, it does not open. The walls of the aneurism are everywhere thin, corrugated, and formed by the external or fibrous coat only, slightly thickened anteriorly by condensation and adhesion of the loose connective tissue of the anterior mediastinum. The sac lies immediately above the pulmonary artery, the right division of which is much compressed, while the left compensates, by dilatation to more than twice its normal size. The mouth of the aneurismal tumour is wide and irregular. (*Presented by Dr. Mouat, Inspector-General, Madras.*)
- 265.** Aneurism of the transverse portion of the arch of the aorta. A globular tumour, as large as a man's fist, projects from the anterior and upper wall of the aorta. The sac, which is laid open, is completely filled with laminated coagulum; it communicates with the aorta by a rounded orifice, two inches in diameter. At the back part of the preparation will be seen another small aneurism of the innominate, close to its origin, the size of half a walnut, projecting outwards and backwards so as to flatten and compress the right bronchus. This little aneurism, as well as the rest of the innominate, is filled with firm decolourized coagulum. The left carotid artery is completely obliterated, converted into a firm, compact, fibrous cord. The left subclavian is pervious and dilated. The descending portion of the arch is very greatly dilated, all its coats much thickened and tough; the lining membrane rough and atheromatous. The left pneumogastric nerve is seen crossing the front of the aneurism,—considerably flattened. No history. (*Presented by Dr. John Macpherson.*)

266. "Enormous aneurism of the transverse and descending portions of the arch of the aorta, from a subject in the dissecting-room, supposed to be about 40 years of age. The aneurism is fully three times as large as the heart. It involves the whole of the arch, and the vessels arising therefrom spring directly from the sac, which is laid open in one part and seen filled with coagulum." (Ewart.)
267. A preparation showing (1) aneurismal dilatation of the whole of the arch of the aorta, resulting in a fusiform tumour, which involves the transverse and descending portions of the same. Its extension is principally forwards and downwards. In the latter situation it presses upon the root of the left lung, and (as will be seen on the posterior aspect of the preparation) has ulcerated into the left bronchus, the opening being small, with a smooth rounded margin, and plugged by a minute coagulum. (2) There is an aneurism of the root of the innominate, the size of half a walnut, projecting forwards and outwards to the right. It is formed by the external and middle coats only, and contains a small amount of stratified coagulum. No history. (*Presented by Dr. Scriven.*)
268. "Aneurism of the arch of the aorta, its size equalling that of a child's head" (Ewart).
- The aneurism consists of a fusiform dilatation of the whole of the transverse portion of the arch, commencing immediately beyond the origin of the innominate artery. This vessel is elongated, its coats thickened, and channel abnormally widened. The left subclavian and left carotid arise directly from the upper part of the sac. The latter has very firm, thick, leathery walls, which are lined by a layer of dense laminated fibrin, fully half an inch in thickness, and the whole sac is seen filled with decolourized coagulum. The aneurism has extended forwards, downwards, and slightly backwards (to the left). A portion of the anterior margin of the left lung is seen firmly adherent to it. Posteriorly it has contracted inseparable connections with the trachea and left bronchus, the latter being greatly flattened, its mucous membrane thinned, and apparently at one spot ulcerated, a communication with the sac being thus established, as indicated by a glass rod in the preparation. The ascending portion of the aorta is widely dilated and atheromatous. (The right ventricle has been cut away.) No history.
269. "Aneurism of the arch of the aorta, which proved mortal by bursting into the left bronchus. The opening into the air-passage is as large as a four-anna piece, and is indicated by the presence of a glass rod. The tumour occupies the whole of the transverse part of the arch. The innominate, the left carotid, subclavian, and the thoracic aorta, spring directly from the sac" (Ewart).
270. "Heart, great vessels, trachea, and larynx of a Greek, admitted with what appeared to be laryngitis. A few days after admission death by apnoea became so imminent that Dr. Chevers opened the larynx in the crico-thyroid space (dividing the cricoid

cartilage also), not being able to reach the trachea from the shortness and fatness of the neck. The patient died on the spot.

There is an aneurism, capable of holding upwards of a fluid ounce, springing from the back of the transverse part of the aortic arch. It extends upwards about two inches, and rests upon the left bronchus, into which it was rapidly making its way. A nipple-like protrusion can be seen in the anterior wall of the bronchus, consisting merely of greatly thickened mucous membrane, which must soon have given way. The walls of the aneurism are lined with a thin layer of coagulum, of which there is a larger mass on the side next the bronchus. There is no arteria innominata. The two carotids rise by a common trunk in front of the aneurism. The left subclavian rises next, and lastly, the right subclavian (cut short off), which ran across behind the œsophagus. Hence the right inferior laryngeal nerve was not *recurrent*, but must have run through from its origin high in the neck to the larynx. There is no trace of it to be seen in the part of the right pneumogastric, which has been preserved. The left pneumogastric and recurrent laryngeal nerves are normal. The cricoid cartilage is ossified, but the larynx is otherwise healthy. The heart is flabby, and presents several patches of fatty degeneration. Both it and the great vessels were deeply imbedded in adipose tissue" (Colles). (*Presented by Professor Norman Chevers.*)

270a. A sacculated aneurism of the arch of the aorta, projecting backwards from its transverse portion. The sac is about the size of a walnut, is intimately adherent to the front of the trachea about half an inch above its bifurcation, and at this part two or three adjoining cartilagenous rings have been separated from each other, and the intervening mucous membrane presents two small ulcerations or fissures, which are seen to be blocked with minute blood-coagula. The anterior tracheal wall is indented inwards from the pressure of the aneurismal tumour, and the calibre of the tube is thereby considerably lessened. The mouth of the sac measures about an inch transversely, and half an inch in its longitudinal diameter. The projection of the aneurism is abrupt. The whole of the arch of the aorta shows fusiform dilatation, and the lining membrane is throughout highly atheromatous and thickened.

The specimen was taken from a European, aged 44, admitted into the General Hospital with left hemiplegia.

The heart (not preserved) was found healthy, and nothing remarkable discovered in the brain, except "serous distension of the right lateral ventricle, and traces of old inflammation about the medulla."

"No symptoms relative to the aortic lesion were manifested until the last two months of life, when the patient began to suffer from repeated and severe attacks of dyspnœa. At this time also dulness over a limited space at the top of the sternum, with slight impulse at the episternal notch and fulness of the jugular

- veins were observed." (*Presented by* Dr. E. Lawrie, Presidency General Hospital, Calcutta.)
271. "Aneurism of the descending portion of the aorta: an aneurismal dilatation exists also at the ascending portion. The thickened and diseased state of the lining membrane is well shown. The sac is large and empty: to this is attached a secondary sac, the size of a walnut, which has given way by ulceration. The mode in which it destroyed life, by bursting into the œsophagus, is beautifully shown. Hypertrophy of the left ventricle enormous." (Allen Webb, *Pathologia Indica*, No. 254, p. 5.)
272. Aneurism of the descending portion of the arch of the aorta, about the size of an orange, communicating with the vessel by a wide mouth, and assuming an ovoid shape. The internal and middle coats have given way a short distance beyond the orifice of the sac, the external coat alone forms the same. It is said to have ruptured and thus produced death. A good deal of laminated coagulum fills the sac. (Webb's *Pathologia Indica*, No. 743, p. 6.)
273. "Aneurism of the arch of the aorta, just beyond the origin of the left subclavian. It is of an elongated form, and would almost hold a hen's egg. It is partly lined with laminated coagulum. It is adherent below and externally to the top of the left lung, into which it burst, causing instantaneous death. The rent in the lower part of the sac can be seen. The patient, a gentleman aged 35, had had a slight cough for some years, but was otherwise healthy, and the disease was never suspected. He felt sick a few minutes before the fatal hæmorrhage took place" (Colles). (*Presented by* Professor J. Fayrer.)
274. "Aneurisms of thoracic aorta, the upper of which caused death by bursting into the œsophagus. Case of Private Scott, Her Majesty's 94th Foot; admitted into the hospital of the Kussowli Convalescent Depôt on the 27th February 1866, with a violent hæmatemesis. The blood, of which he discharged upwards of a quart on the night of the 26th, was dark coloured, and not in the least frothy. He was treated with turpentine and gallic acid. The hæmorrhage ceased next day, but returned on the 28th, on the patient sitting up, and proved instantly fatal. The left ventricle is in a state of fatty degeneration, and patches of atheromatous deposit are seen in the aorta, particularly in its arch and descending and thoracic portions. The valves are healthy (as shown at the back of the specimen). The aneurismal sac begins just beyond the origin of the left subclavian artery, by a small opening, the size of a silver two-anna (three-penny) piece. The sac is shaped like a small auricular appendix, and extends backwards from the aorta, opening into the œsophagus by a breach as large as a shilling (marked by a cross of black glass rods). The edges of the aperture are tolerably smooth and everted; it must have existed for some time before death. The cavity of the aneurism is filled with firm coagulum, by which both the opening into the aorta and

that into the œsophagus are to a great extent blocked up (a red glass rod has been passed from the aorta horizontally through the sac into the œsophagus). The posterior wall of the aneurism is very thin, and has in fact given way in one part (marked by a black glass rod), so that, had the patient lived much longer, blood would have been effused into the posterior mediastinum. The upper part of the œsophagus in the vicinity of the aneurismal aperture is blocked by a firm coagulum; the lower part has been stuffed with cotton, and a blue glass rod passed through it. About four inches below this aneurism is a second smaller one, which has evidently begun at the centre of an atheromatous patch. It has been filled with cotton-wool, and its mouth kept open by two bits of glass rod, placed at right angles. Its cavity was devoid of coagulum, and would, when recent, have held a hazelnut." (*Presented and described by Dr. J. A. P. Colles.*)

275. A large aneurism of the descending portion of the arch of the aorta. "The sac now spread out measures ten inches in length." It was found occupied by a very large mass of firm coagulum. It has apparently pressed backwards upon the trachea, which, in the preparation, is seen to be flattened, and, at the site of its bifurcation, the mucous membrane presents superficial ulceration or erosion. The whole of the aorta is diseased, its inner surface irregular, thickened, and rough from atheromatous changes. The aortic valves are stretched. The left ventricle dilated. (*Presented by Dr. Mackenzie, General Hospital.*)

276. A preparation showing (1) a large aneurismal sac, the size of an orange, arising from the descending portion of the aortic arch, and pressing backwards and upwards towards the left. In the recent state, the superior lobe of the left lung was found firmly united to the sac, and the latter pressed upon the trachea near its bifurcation, particularly upon the left bronchus, rupture into which was the cause of death. (2) A second aneurism, rather smaller than the preceding, is seen below it, lying close to, and intimately connected with the sixth and seventh dorsal vertebræ and their adjacent articulating ribs. It arises from the thoracic aorta beyond the arch. The aorta between these two aneurisms is rather dilated, and its walls much thickened, but is still tubular, and hence a kind of hour-glass shape is presented by the vessel with its upper and lower aneurismal expansions. Both sacs are filled with a good deal of laminated coagulum. The lung-substance in contact with the superior and larger aneurism was found greatly compressed and carnified. The vertebræ and ribs associated with the smaller sac are eroded and carious. In both, the aortic tunics are deficient. The œsophagus is said to have escaped pressure.

The patient, Anthony Matthew, an East Indian, aged 40, by occupation a cook, was admitted into hospital on the 30th of July 1869, and died on the 9th of the following September. "He had suffered from cough and spitting of blood for the last five months, and was treated in the General Hospital for pneumonia,

for he had extreme dulness in the left mammary and infra-clavicular regions, and complained of pain in this part of his chest." The nature of the case was diagnosed by Dr. Chuckerbutty, under whom the man was admitted in this hospital—"a pulsating tumour, with distinct aneurismal bruit."

* * * * * "He died somewhat suddenly after expectorating several pints of blood, the aneurism having ruptured into the left bronchus." (*Presented by Professor S. C. Chuckerbutty.*)

277. Aneurismal dilatation of the whole of the aorta, immediately beyond the left subclavian artery, constituting a flattened tumour, the size of a small orange, which was found firmly adherent to the apex of the left side of the thorax, rising a little into the neck, and united to all the soft parts here situated, as well as to the first rib and clavicle. It lay immediately to the left of the bifurcation of the trachea, and over the left bronchus, which appeared to be slightly compressed by it. The aneurismal sac is much thinned where adherent posteriorly as above described, so much so, that it was torn on removal. It communicates with the aorta by a very large oval-shaped orifice, and is almost filled with firm, organized, and laminated coagulum. The left pneumogastric nerve was found to descend immediately over the front of the aneurismal sac, and the recurrent laryngeal passed upwards between its posterior surface and the trachea, closely adherent to the former, and distinctly thickened. Below the aneurism the lining membrane of the aorta is highly atheromatous, but this condition did not extend below the diaphragm. On the proximal side of the aneurism the aorta is dilated. The origins of the vessels from the transverse portion of the arch are narrowed, that of the left subclavian is completely occluded. A fourth branch, the left vertebral, arises between the left subclavian and left carotid.

This specimen was taken from a Mahomedan, aged 35, who was admitted into hospital with great laryngeal dyspnoea, threatening imminent suffocation. Laryngo-tracheotomy was at once performed, it being suspected that œdema of the glottis or acute laryngitis existed. The man survived the operation for forty-eight hours, experiencing some relief to the breathing. He died from acute hypostatic congestion and œdema of the lungs. The larynx was found healthy, but this aneurismal tumour was discovered on *post-mortem* examination. (*See further, "Surgical Post-mortem Records," Vol. I, 1880, pp. 723-24.*)

278. "Aneurism of the thoracic aorta in a native of China, forming a pulsating tumour on the man's back. The whole of the thoracic and a portion of the abdominal aorta, the sac of the tumour, a portion of the spine, and a couple of ribs are *in situ*." The sac is firmly adherent to the left side of the bodies of five dorsal vertebrae, which are partially absorbed and hollowed out. "The bulk of the sac, however, has been directed against the ribs, near their vertebral articulations, causing complete absorption of a couple of inches of one, and partial disintegration of

about an inch of the inferior margin of another. The opening of the aneurism here is fully an inch and a half in diameter, and the parietics, which are reflected, are attenuated, and more or less lined with coagulated fibrin. The distance from the spinous processes of the vertebræ to the wall of the aneurism, at the point of emergence from the chest, is about an inch. There is a ragged opening in the sac, close to the upper rib, which probably indicates the seat of rupture just prior to death. Here the sac is exceedingly patulous and attenuated, which has been partially compensated for by the deposition of laminated fibrin within, and of inflammatory adhesions without" (Ewart). The aneurismal sac probably equalled, during life, the size of the foetal head; even now, in its collapsed state, it measures seven inches transversely, and seven and a half inches in the longitudinal diameter. The aorta below the aneurism is considerably reduced in size (Webb's *Pathologia Indica*, No. 1667, p. lv). (*Presented by Dr. J. A. Ratton.*)

- 279.** "Aneurism of the thoracic aorta, proving fatal by rupture and hæmorrhage into the œsophagus. The large opening from the aorta into the sac is about an inch and a half by one. The aneurism is about the size of an orange, and is bound down to the lung and œsophagus, which it has perforated about an inch from the entrance of the tube into the diaphragm. The edges of this opening are everted and somewhat ragged. A coagulum is seen indicating Nature's attempt to plug the orifice and to prevent the fatal result. The opening in the œsophagus is circular, and about three-quarters of an inch in diameter. There are three other small aneurisms in the aorta, close to the large one just described, all of which have smooth-margined communications with that vessel.

The subject was an asthmatic Hindu, a native of Kumaon, aged about 52, whose body was picked up on the banks of one of the rivers near Almorah, and was examined to ascertain the apparent cause of death" (Ewart). The above-described aneurism was discovered "opening into the œsophagus, about an inch above the diaphragm, and the stomach was enormously distended with grumous coagulated blood." (*Presented by Moulvie Tameez Khan, Khan Bahadur.*)

- 280.** "Aneurism of the thoracic aorta commencing just below the origin of the seventh pair of intercostal arteries, extending along three inches of the vessel, and situated on the bodies of the eleventh and twelfth dorsal vertebræ, which are much eroded, leaving their cartilages unaffected. The sac was firmly adherent to the crura of the diaphragm. It had given way by a small opening on the right side, close to the spinal column, into the right pleural cavity" (Ewart).

The aneurism is about the size of an orange, projects forwards and to the right from the thoracic aorta just above the diaphragm, to which the inferior and anterior aspects of the sac are closely adherent. The abdominal aorta is reduced in size.

231. "Aneurism of the thoracic aorta, pressing upon and causing caries of the bodies of ten dorsal vertebræ. The body of one below has been completely absorbed down to the dura mater, and still higher a portion of the body of another vertebra is disintegrated down to the same tunic. The large sac, now rather torn from being detached from the spine, is turned aside to display the damage done to the spinal column. It is filled with a very dense, coarsely laminated coagulum. In one spot the sac was about to open into the left lung.

The patient was an elderly American seaman, who became perfectly paraplegic only a few days before death. After having lost all power of sensibility in his lower extremities, he declared that on one occasion, during the night, he found himself able to use his legs. The truth of this appears possible considering the manner in which the spinal cord was compressed by the tumour, whose volume was liable to be diminished from the quiet state of the circulation during sleep" (Ewart). There is great general dilatation of the whole of the arch of the aorta.

282. "Aneurism of the commencement of the thoracic aorta. It has three sacculated divisions, the largest of which has opened into the left bronchus. Behind, the bronchus is held open, exposing a square orifice possessing jagged and irregular edges. This opening is partially plugged by coagulum" (Ewart).

The aneurism is about the size of a hen's egg. Its orifice of communication with the aorta is $2\frac{1}{2}$ by $1\frac{1}{2}$ inches in diameter, the margins smooth and rounded. The uppermost "sacculated division" of the sac encroaches upon the arch. It will be noticed in this preparation that the four brachio-cephalic vessels arise separately and independently from the arch of the aorta: there is no innominate artery.

283. Aneurism of the thoracic aorta, the size of a foetal head. The sac lies to the left front of the second, third, fourth, fifth, and sixth dorsal vertebræ, and has produced considerable displacement of the surrounding parts. The aorta is greatly diseased. Large patches of atheromatous thickening,—some hard and cartilagenous-like, others brittle and distinctly calcareous, all irregular in outline and varying in size—stud the inner surface. This condition is well marked throughout the arch, but especially so in the descending portion and thoracic aorta. The aneurismal dilatation commences abruptly at the junction of the descending with the thoracic aorta. The mouth of the sac has a diameter of two inches in either direction, and a very distinct, rounded, raised, and thickened margin is seen where this communicates with the main vessel. The dilatation is chiefly to the left and backwards against the spine, but the sac extends also upwards and across the dorsal vertebræ.

The left bronchus has been much compressed and narrowed, is only a little larger than a crow-quill; the right bronchus, on the contrary, measures fully an inch in diameter, and its membranous portion has evidently been stretched. The œsophagus has been so much displaced that it lies to the front of the spine, and to the right of

the aneurismal sac, and is much compressed between them at the level of the fourth dorsal vertebra. The bodies of all the vertebræ upon which the aneurism rests are deeply eroded and carious. The sac of the aneurism is thick and firm in all directions except towards the left, where it is almost diaphanous, and presents two small slits, probably produced in attempting to remove the tumour *post-mortem*. The preparation was taken from the body of a European, aged 36, a ship's steward. "He denied syphilis, but cicatrices were found in both groins. The disease had commenced apparently about two years previous to his admission into the General Hospital," but he had continued to do his work, and his general health remained good. During the last two and a half months only, had he suffered from "attacks of dyspnœa, constant cough, great pain in the back and left side, difficulty in swallowing solid food, and inability to lie in any other position than on the right side." The left ribs and clavicle bulged a little, and there was an irregular impulse in the third intercostal space. No cardiac bruit of any kind could be detected, and no lesions were found in the heart itself after death. (*Presented by Dr. Edward Lawrie, General Hospital, Calcutta.*)

284. A large aneurism of the thoracic aorta, which ruptured into the left pleura. Its orifice of communication with the aorta is about two inches below the origin of the left subclavian artery. It is oval in shape, about two by one-and-a-half inches in diameter, the margins rounded and slightly roughened. The sac extends a little to the right, from the lower margin of the third to the ninth dorsal vertebra, being adherent to the same and to their right costal articulations. The expansion is, however, chiefly to the left of the spine. Here, the sac is the size of a large orange, and its walls are thin. It lies upon the sixth, seventh, eighth, and ninth ribs, at their spinal articulations. The outline is fusiform. The bodies of the fourth to eighth dorsal vertebræ are deeply eroded, the anterior common ligament completely destroyed, the bone rough and bare. The intervertebral cartilages are prominent, and also superficially ulcerated. Between the seventh and eighth ribs, about an inch from the spine, the aneurism is seen to make its way backwards, and presented externally beneath the integuments as a smooth rounded tumour, the size of a small orange. About one-half of the seventh and eighth ribs is here destroyed, the bone rough and carious. The portion of the aneurism lying to the right of the spine contains a good deal of laminated coagulum, but the rest, except the protrusion to the back, contained fluid blood only. The inner surface is rough and atheromatous, in parts calcareous. The sac is thick and apparently composed of all the coats of the aorta to the right of the spine, but on the left, becomes gradually thinned towards the ribs. The rupture took place on this side, at the upper part of the sac, immediately in front of the sixth rib, about an inch from the spine. The rent is about two inches wide, its margin, ragged and thin. The

portion of the sac which protrudes backwards is also very thin, the boundaries being chiefly composed by the muscles of the back. The spinal cord and its membranes remain entire, and have not been exposed. The left pleural cavity was found filled with large, dark, soft coagula and bloody serum. The left lung was floated forwards, but adherent to the sac of the aneurism posteriorly. The œsophagus was pushed considerably to the right. The root of the right lung adhered to that portion of the aneurismal tumour which extended across to this side. The patient, a native male, aged about 28, stated that he had been troubled with severe pain in the left side of the chest,—especially at the back, near the angle of the scapula,—for the last two years. Only two months ago became aware of a small swelling at this painful spot. This swelling, on his admission, was distinctly pulsatile, situated between the spine and the vertebral border of the scapula. No bruit could be heard over it, and there were no murmurs with the heart's sounds. There was no history of strain or injury, or of syphilis, &c. He died suddenly. (*See further, "Medical Post-mortem Records," Vol. I, 1875, pp. 661-62.*)

285. Highly atheromatous aorta, with perforation of the left bronchus, by rupture of a small aneurism. The ascending portion of the arch and the innominate artery are fusiformly dilated. At the junction of the descending portion of the arch with the thoracic aorta is a puckered, depressed orifice, leading into a sacculated aneurism, the size of a nutmeg; directed backwards and to the left, so as to overlie the left bronchus, to which it has become firmly adherent. The sac appears to be formed by an expansion of all the coats of the aorta. No laminated fibrin, nor any coagulum was found in its interior. The orifice in the aorta will admit a goose-quill. The sac has ruptured (ulcerated) into the left bronchus, half an inch below the bifurcation of the trachea, at a spot where the membranous portion of the bronchus unites its fifth, sixth, and seventh cartilagenous rings. The little tumour protrudes so far into the bronchus that the latter must have been almost occluded. From a European seaman, aged 49. Death was sudden from profuse hæmorrhage. (*Presented by Dr. S. C. Mackenzie, General Hospital, Calcutta.*)

286. "The sac of an aneurism of the abdominal aorta, about four inches above the bifurcation. The orifice leading to it is as large as a shilling, possessing smooth edges. The aneurism is about the size of a small orange, and its interior is partially lined with coagulum" (Ewart). The sac is formed by the external coat only. It seems to have been intimately connected with the mesentery and small intestine. (*Presented by Dr. Mouat, Inspector-General, Madras.*)

287. "Aneurism of the abdominal aorta, just after its exit through the diaphragm, through which it burst, by an opening as large as a rupee, into the left pleural cavity. The large sac is laid open, showing that the bodies of the three upper lumbar vertebrae have, to a considerable extent, been absorbed, leaving the intervertebral cartilages

intact. The opening from the aorta into this sac has smooth edges, and is about the size of a rupee" (Ewart).

The sac of the aneurism is very large, extends from the under surface of the diaphragm to the iliac fossa. It is formed almost entirely by the outer, fibrous, thickened tunica of the aorta. The lining membrane of the latter is throughout highly atheromatous.

"The patient, a Hindu, had a variety of treatment, having no reference to aneurism, the disease being unsuspected. Indeed, in order to relieve pain in the loins, it was his practise to get his mother to stand upon him and press him there with her feet. Having been a short time in hospital, he died by bursting of the aneurism through the diaphragm." (Allan Webb, *Pathologia Indica*, No. 1040, p. lv.)

288. Double aneurism of the abdominal aorta. One is the size of a hen's egg, the other of an orange. They arise almost directly opposite each other from the aorta, just beneath the diaphragm, and the smaller tumour appears to involve also a branch (? the gastric) of the celiac axis. It is filled with firm, solid coagulum, the portion of the artery involved (indicated by a glass rod) being found in the same condition. The orifice of communication is oval, one inch in length, half an inch in breadth. The sac is formed by all the coats of the vessel, and has a globular outline. The larger aneurism has pressed backwards against the spine, causing extensive excavation and caries of three or four vertebræ. These are well displayed in the preparation, the aneurismal tumour having been dissected off and displaced to one side. The sac is very thin where it rested upon the spine, and has got torn. It was filled with laminated fibrin. The whole of the aorta is wide and extensively atheromatous. No history. (*Presented by Dr. Bedford.*)

289. Aneurism of the abdominal aorta. The sac is almost completely filled with very firm, dense, distinctly laminated fibrin. It communicates with the aorta by a wide orifice, and its external surface is thickened by adventitious adhesions to the surrounding soft parts. No history.

290. "Enormous aneurism of the abdominal aorta, just below the diaphragm. The sac, which is almost filled with coagulum, adheres above to the diaphragm, below to the lesser curvature of the stomach, and involves the celiac axis. The œsophagus, into which a glass rod had been passed, is greatly compressed by the tumour. The patient, a Musalmani woman, aged 39, was admitted on the 4th April 1864, and died on the 8th May 1864." (Colles.)

291. An aneurism of the abdominal aorta, the size of a hen's egg, taking its origin at the root of the superior mesenteric artery. The sac is somewhat conical in shape, and involves all the coats of the aorta, communicating with the latter by an orifice of oval shape, two inches in length and an inch wide. The margins of this orifice, and the walls or sac of the aneurism are very hard, and almost completely calcareous. The sac is lined by a distinct layer of laminated fibrin, covered by a recent, soft, and dark

coagulum. The superior mesenteric artery at the summit or apex of the aneurism is completely obliterated. The inferior mesenteric, renal, and phrenic arteries are abnormally large and tortuous. The aorta, throughout, is much thickened and atheromatous. Below the aneurism its channel is narrowed.

The specimen was found on the *post-mortem* examination of a European, aged 65, who died in hospital from acute pulmonary tuberculosis. There were no symptoms referring to the aneurism during life. (*See further*, "Medical *Post-mortem* Records," Vol. II, 1876, pp. 7-8.)

292. Aneurism of the abdominal aorta, about the size of an orange, situated just below the diaphragm, and in close proximity to (but not actually involving) the cœliac axis. It projects anteriorly and to the right of the spine. The sac of the aneurism was firmly united to the vena cava laterally, and in front, to the pancreas, mesentery, &c. Its orifice of communication with the aorta is wide—about $2\frac{1}{2}$ inches in diameter—and rounded, the margin thickened and partially calcified, and so also is the interior of the sac throughout. It is lined by a little stratified fibrin, but was chiefly filled with fresh recent coagulum. The subject was an adult Hindu (age not stated). (*Presented by* Assistant Surgeon Gopal Chunder Roy, Howrah.)

293. Aneurism of the abdominal aorta, proving fatal by rupture into the left pleural cavity. From a European (Italian) seaman, aged 42, who died in hospital.

On opening the abdomen, the intestines were found pushed towards the right side by a large, dark mass, which occupied the whole of the left hypochondriac, left lumbar, and inguinal regions. The position of the left kidney could not be identified. The peritoneal cavity itself remained intact. On careful examination, this mass was found to consist of extravasated blood—a huge coagulum—in the retro-peritoneal cellular tissue surrounding the left kidney, and was derived from a ruptured abdominal aneurism, situated just below the diaphragm, almost opposite, but a little to the left of the cœliac axis. When entire, its size must have equalled a large orange. The sac was for the most part empty, but contained on one side, a layer of laminated fibrin, about an inch in thickness, hollowed at its centre. The sac is much thinned superiorly and to the left where rupture took place. Two ragged openings are here met with, one nearly an inch in length, the other large enough to admit a finger. Through these, hæmorrhage had taken place into the retro-peritoneal tissues, and, by implication of the diaphragm, into the left pleura. The left kidney was found imbedded in the abdominal coagulum. Posteriorly, the aneurism was found to have pressed upon and deeply eroded the first lumbar and the twelfth, eleventh, tenth, and a portion of the ninth dorsal vertebrae, both the intervertebral cartilages and the bodies of the vertebrae being hollowed out. In the left pleural cavity an enormous blood-coagulum, weighing 2 pounds 13 ounces, was found, as also about fifty ounces of sanguineous serum, the former taking a distinct and complete mould of the cavity and bearing the

impressions of the lower ribs. The body was pallid. The brain, heart, lungs, and other viscera were all pale and almost bloodless.

294. Aneurism of the abdominal aorta, terminating fatally by rupture into the right pleural cavity.

“The body was blanched, heart empty and firmly contracted. There was a large amount of coagulated blood in the right pleural cavity, which had compressed the right lung, and pushed the liver low down into the abdomen. Left lung pale and crepitant throughout. Liver and spleen healthy, as also the kidneys. There was a swelling on the aorta between the pillars of the diaphragm, extending up into the thoracic cavity. On the right side there was a rent passing into the swelling or aneurism and communicating with the right pleura. The aneurism is sacculated, and on the posterior part of the artery it had so pressed on the bodies of the eleventh and twelfth dorsal vertebræ that it had destroyed their periosteum, and exposed the bone to a considerable extent. The large opening posteriorly, in the preparation, is where the aneurism was closely united to the vertebræ. The smaller opening in front and to the right is where it burst. (The arch of the aorta gives off four branches, the unusual one being the left vertebral.)

History.—Daniel Wallace, an American seaman, of the ship *Lucy S. Wells*, was admitted into the General Hospital on the 19th of May 1877. He stated he had suffered from pain in the epigastrium for about the last three months. It increased when his stomach was full, and on exertion. It came on rather suddenly at first, while he was at work. There was a good deal of visible pulsation at the pit of the stomach; no distinct tumour. There was a bruit to be heard about the middle of the epigastrium. The heart's sounds were normal. During his stay in hospital the pain and uneasy symptoms in the epigastrium gradually got worse. After a time he complained of great dorsal and lumbar pain. A couple of days before his death, it was evident that a tumour existed at the pit of the stomach, it was distensible, and a distinct bruit could now be heard over it. The pain was very intense, especially in the back. He felt also as if his bowels were being drawn up towards his chest. He died suddenly, on the morning of the 11th September, becoming faint and blanched just before he expired. (*Presented and described by Dr. F. C. Nicholson, General Hospital, Calcutta.*)

295. The thoracic and abdominal aorta highly atheromatous and thickened, and exhibiting an aneurismal dilatation, the size of a walnut, in connection with the former, and a sacculated, ruptured aneurism, the size of an orange, in connection with the latter.—From a Mahomedan (Arabian) woman, aged 30, who died in hospital.

The rent or rupture is large, ragged, situated on the anterior aspect and near the upper end of the sac. The latter was firmly adherent to the first three lumbar vertebræ behind, and in front and above to the transverse colon, pancreas, and pyloric end of the stomach. Its orifice of communication with the aorta is

divided by an incomplete, thickened, and atheromatous septum. The sac projects from the anterior aspect of the aorta, and is much thickened by adventitious adhesions to the surrounding parts. For about half an inch from its orifice, all the coats of the vessel may be traced into the sac; beyond this, it is only formed by the outer or fibrous tunic greatly thickened. It is situated just below the celiac axis, and the superior mesenteric artery arises from just within the lower margin of the mouth of the aneurism. The latter is filled partly by laminated, partly by soft, dark, blood-coagulum, a good deal of which was found protruding from the rent in the sac. A very large amount of fluid and coagulated blood was found extravasated in the peritoneal cavity.

The other smaller aneurismal dilatation, situated in the thoracic portion of the aorta, lay just below the root of the left lung, exactly in the median line, and on the anterior surface of the vessel. It was lined by a small, concave, laminated coagulum. (*See further, "Medical Post-mortem Records," Vol. III, 1880, pp. 425-26.*)

295a. A small dissecting aneurism of the abdominal aorta, about the size of a cherry-stone. It encroaches very much upon the right common iliac artery, at the point of its origin. A small rounded opening in the lining membrane of the aorta leads into this false aneurism, which is formed apparently by the separation of the inner from the middle coats of the vessel. The lesion appears to have been healed spontaneously by the deposit of laminated fibrin.—Taken from a native woman, aged 58, who died in hospital from chronic Morbus Brightii, with atheromatous degeneration of the whole of the aorta—thoracic and abdominal. (*"Medical Post-mortem Records," Vol. II, 1877, pp. 457-58.*)

296. Preparation showing an aneurism of the innominate artery, the size of a walnut, which ruptured into the trachea. The interior of the sac is seen to be lined by a few layers of laminated fibrin. The mouth, corresponding to the orifice of origin of the innominate from the arch of the aorta, is rounded, smooth, and about the size of a shilling. A ragged opening, sufficiently large to admit a goose-quill, is seen at the point of rupture into the trachea; it is partly closed by a valve-like fold of the mucous membrane of the latter. The whole of the arch of the aorta is in a state of fusiform dilatation, and its lining membrane rough, irregular, and greatly thickened from atheromatous changes. The patient, Daniel McL., a Scottish seaman, was admitted into hospital on the 5th of May 1867, and died from sudden and profuse hæmoptysis on the 28th July. (*Presented by Professor S. B. Partridge.*)

297. "Small aneurism of the arteria innominata. The sac is about the size of a pigeon's egg, and is firmly adherent to the anterior wall of the trachea, which it has perforated three inches below the rima glottidis. Anteriorly, the parietics of the sac are

pretty thick from the more or less perfect preservation of the middle and external tunics. Posteriorly, these have given way, at an early period, and then the trachea formed the inner wall of the aneurism; this at length gave way, and the patient succumbed from hæmoptysis and asphyxia. The orifice in the trachea runs in its greatest diameter transversely to the axis of the tube, and its edges are irregular and jagged. The mucous membrane around this is thickened, puckered, and raised from inflammatory action and exudation. The rent is about half an inch long, and is indicated by the insertion of a glass rod, which also passes through the long axis of the aneurismal sac. The ascending aorta, which is unopened, is seen to be aneurismally dilated" (Ewart). (*Presented by* Dr. Herbert Baillie.)

298. "Parts exhibiting aneurism of the innominate, with a portion of the arch of the aorta. The tumour is as large as a Seville orange, and presses upon the anterior surface of the trachea." The latter was opened and examined from behind, "but no ulceration or local degenerative change found, nor in the bronchi, although at one time there was evidence of pressure upon the right bronchus. The innominate vein and right pneumogastric and recurrent nerves were subjected to pressure. The sac is laid open in front, and is filled with fresh coagulum of a dark-red colour, in which there is scooped out a channel for the circulation of the blood from the aorta into the subclavian and carotid. The patient died from pneumonia and dysentery" (Ewart). The right lung, consolidated from pneumonia, is preserved with the specimen.

299. "Aneurism of the left common carotid artery, at its bifurcation, extending along the internal carotid. The subject of this aneurism was admitted into hospital on the 4th of February 1846, with a pulsating tumour, the size of a walnut, situated at the left side of the neck, between the sternocleido-mastoideus and angle of the jaw, and opposite to the os hyoides. The pulsation and aneurismal thrill were distinct. By the stethoscope a rushing sound was heard. By pressure on the common carotid, at the anterior inferior triangle, the tumour lost its pulsation, became soft, flaccid, and diminished in size, but as soon as the pressure was removed, it became hard, pulsating, and resumed its former dimensions. Patient stated that seven days ago he experienced pain in his neck, and on laying his head on a pillow, on the left side, he felt as if the head was raised at each contraction of the heart. This made him examine his neck, when he noticed for the first time a pulsating tumour, little smaller than at the time of examination. The pain gradually increased, extending towards the left occiput. When he came under observation, he complained of much pain in the tumour and about the occiput on the slightest movement of his neck. He is unable to swallow any solid food, owing to the pressure of the food on the pharynx. Until two years ago, he was a lascar on board the ship *Thames*. He was temperate, and met with no injury about the neck. The common carotid

was ligatured on the 9th of February. He died on the 8th of March, and the *post-mortem* runs as follows:—

“The tumour in the neck greatly diminished in size, flat, and flaccid. On opening the left eye, the cornea was observed to have sloughed away, the humours had escaped, and the organ was collapsed. The whole of the left side of the neck was in a state of complete disorganization from sloughing. Bubbles of air escaped as it was cut into, and also a quantity of thin, watery fluid, almost black, mixed with blood, resembling tar. The ligature had separated from the artery, and was found lying in the wound unattached. The artery lay in the internal division of its sheath, divided by the ligature, with the two orifices almost in contact. The lower orifice was plugged up with a coagulum of blood to within half an inch of the origin of the vessel from the aorta, where it commenced so close to the innominate that it might be said to arise together with it from a common origin. The upper orifice of the divided carotid was also filled with coagulum, which extended up to the aneurismal sac. The aneurism was situated at the bifurcation of the common carotid, and extended along the internal carotid about an inch. The sac was full of coagulated blood. Internally, towards the pharynx, there was a large opening into that canal, from sloughing of its parities. The common carotid artery was found perfectly healthy. External to the divided artery, the par vagum was sound. External to this nerve, the jugular vein was perforated by ulceration, the opening being ragged. The upper portion appeared to have been destroyed for about an inch and a half. Its posterior wall was adhering to the surface of the aneurismal sac. On cutting into this part of the vessel, its internal coat presented a bright red inflammatory appearance. The sloughing of the neck extended from the angle of the jaw backwards to the spinous processes of the vertebræ as high as the occiput, and down the side of the cervical region to within an inch and a half of the clavicle. On raising the pharynx, and making an opening into the posterior and upper parts of that bag, two large ulcerated holes were found on its left side communicating with the sac, one opposite the isthmus of the fauces, and the other below it, on a line with the glottis, both large enough to admit the tip of the thumb. It must have been through these openings that the blood escaped for some time and tinged the expectoration. The lining membrane of the trachea and bronchial tube appeared to be in a high state of inflammation. The heart and vessels arising from it presented a normal appearance. The brain was sound, but the vessels on its surface were congested and filled with tar-like blood, similar to that found surrounding the aneurismal sac. On opening the left cavernous sinus, it was found to contain coagulated blood. The ophthalmic artery seemed distended. Its lining membrane was of a bright, florid red appearance. The arteries on the right side of the neck were injected with coloured wax, but although the injection ran freely into even the small branches of the external carotid, none of the vessels were filled with it either in the neck or face” (Ewart’s Catalogue, No. 697). (*Presented by Professor R. O’Shaughnessy.*)

300. “Aneurism of the carotid artery. The preparation exhibits a very large aneurismal tumour arising near the bifurcation of the right common carotid artery, and involving also the internal carotid. The skin over the sac is considerably thinned, at some places (lower and back part) actually inseparably adherent to the tumour. The sac itself extends from the clavicle quite to the base of skull above, and from the median line in front to the cervical vertebræ behind. The sterno-mastoid and platysma muscles were found considerably stretched and flattened out.

On dissecting out the part where the carotid artery was deligated (*see history below*), no clot was found in the vessel below the seat of the ligature, while

the part above was partially plugged by a small, ill-formed coagulum. On making a slight incision into the sac, a large quantity of grumous, fluid blood, mixed with soft pieces of coagula, escaped from the aperture. On introducing the finger through this, the mastoid process and the transverse processes of the cervical vertebræ could be distinctly felt. The cornu of the hyoid bone was felt projecting into the sac, covered by a very thin, smooth membrane. There were no consolidated layers of coagulum in the sac. The vains is somewhat thickened, but otherwise apparently healthy at the spot where the artery was tied. The recurrent branch was œdematous and imbedded in the exudations thrown out. An opening is seen at the lower part, which appears to be the aperture of communication of the internal carotid with the sac. On laying open this artery, the cerebral end was found thin, and apparently filled with granular matter.

The common carotid of the left side divided itself behind the angle of the lower jaw. The heart was of natural size, and its valves normal. The aorta free from atheromatous deposit. The lungs were partially congested, scattered, patches of semi-solid character in the right. A hydatid in the liver. A large number of round worms in the small intestine.

The sac is now stuffed with cotton.

History.—Case of Ram Chand Auddy, aged 32, a Hindu, admitted into the hospital on the 17th of April 1870, with a pulsating tumour in the right side of his neck. This first commenced about a year and a half ago as a small, pulsatile swelling, at about the middle of the neck. It has been increasing gradually in bulk, and accompanied, for the last month and a half, with persistent, severe, lancinating pain in the part. There has been partial loss of sensation in certain portions of the right ear for the last three months. About a month prior to the first appearance of the swelling, the man received a pretty smart slap on his right ear and upper part of the neck adjoining. Had never suffered from any difficulty in breathing or in swallowing. Has been always of sober habits. No history of any hereditary affections. The pulsations in the tumour were synchronous with the cardiac systole and radial pulse.

The common carotid was tied below the omo-hyoid muscle. No return of pulsation or bruit in the tumour occurred after the operation, and there were no symptoms of cerebral or circulatory disturbance, except some partial pneumonia. The ligature came away on the 14th day, but secondary hæmorrhage took place that same night. The innominate artery was tied at midnight at the spot indicated by the green glass rods. The bleeding was checked, but the patient gradually sank, and died about twenty-four hours after the last operation." (*Presented by Professor S. B. Partridge.*)

301. Preparation showing a large aneurism of the root of the right common carotid artery. The heart and aorta, trachea and œsophagus have been preserved *in situ*. The aneurism is about the size of the closed fist, very closely adherent to the skin of the neck, which during life was tense and stretched, of a purplish colour, and much thinned from pressure. The aneurism is seen to have developed just above the bifurcation of the innominate, which vessel is larger (more dilated) than normal, but forms no part of the aneurismal sac. The latter ascends

upwards and outwards into the neck, the lower half of the right carotid participating in its formation, while the rest of this vessel, traced upwards to its bifurcation, is greatly reduced in size, and really external to the sac. The right subclavian artery is also reduced in size, its orifice of origin from the innominate elliptical, and flattened from compression, the lower part of the aneurism pressing upon this vessel in its "first portion." The original sac (for the aneurism is a diffuse one) is about the size of a duck's egg. Its rounded, somewhat abrupt margin can be readily distinguished. The main portion of the sac, however, is formed by the cellular tissue and adjacent muscular fibres of the sternomastoid and platysma muscles, of the deep and superficial fasciæ of the neck, &c., all flattened out and condensed around the primary aneurismal expansion. The interior of the latter is lined by a thin layer of recent soft coagulum, while at the lower part, just above the root of the right subclavian, where the sac forms a kind of little diverticulum, a mass of stratified, fibrinous deposit is found, about the size of a walnut, almost entirely filling it. The inner surface of the true sac is rough and tuberculated from atheromatous changes. The ascending portion of the aortic arch is dilated, and its interior can be felt to be thickened and atheromatous. The aortic valves show slight opacity and cohesion. The mitral flaps seem to be healthy.

While the sac of the aneurism is intimately adherent to the integument of the neck on its anterior and outer aspects, it is also closely adherent to the trachea and œsophagus on the inner side, and to the spine posteriorly. Indeed, in the last direction, the pressure has been so considerable that the bodies of the seventh cervical and first dorsal vertebræ are found superficially excavated and rough.

The left common carotid and left subclavian arteries are abnormally large. Both trachea and œsophagus were found greatly displaced to the left of the spine, and the mucous membrane of both, especially opposite the sac, was red and congested.—From a native male patient, who died in hospital.

302. Aneurism of the right subclavian artery, in its first portion. The primary dilatation seems to have been only the size of a pigeon's egg, and to have occurred at the root of the thyroid axis, and extended above and to the outer side of this vessel. A secondary dilatation of the sac appears to have taken place, in which the external tunie only forms the wall of the aneurism, and this has resulted in a tumour the size of an orange. Both primary and secondary sacs are partially filled with laminated fibrin. The vertebral artery and thyroid axis are pervious and dilated. The superior intercostal, which arises from the back part of the sac, is contracted and atrophied. At the extreme outer and upper part of the sac, where it presented in the neck, the skin is seen to be adherent to it, and a laceration or perforation is here observed, through which it burst and produced death by hæmorrhage. The right common carotid artery is a good deal thickened, as it lies on the inner aspect of the tumour. (*Presented by Professor O'Shaughnessy.*)

- 303.** Aneurism of the right subclavian artery. It arises from the "second portion" of this vessel, just beyond the thyroid axis. The primary sac is about the size of a walnut. This appears to have expanded outwards and upwards, increasing the size of the tumour to that of an orange, *i.e.* has developed a secondary sac by a progressive thinning and attenuation of its walls. To the extreme outer margin of the sac a portion of the integument of the neck is seen firmly adherent, and exhibits an irregular-outlined, ragged rupture or laceration, the size of a two-anna piece. Two or three smaller perforations of the sac are seen near the large one above described. The trunks of the right internal mammary and vertebral arteries are seen at the inner side of the aneurism, and the origins of the thyroid axis and superior intercostal close to, and partially blended with the sac.

The main vessel (right subclavian) has been opened from behind. The arch of the aorta is slightly dilated; it gives off an additional branch from its transverse portion, an artery as large as the radial, and probably the left vertebral. No history of the case exists.

- 304.** "Aneurism of the external iliac artery, from a native." (Webb's *Pathologia Indica*, No. 968, p. lv.)

The aneurism is of oval shape, the size of a walnut. It appears to have involved the lower half of the artery, reaching as low down as Poupart's ligament. A ligature is seen placed on the external iliac (right) on the proximal or cardiac side of, and quite close to the sac, and from this spot upwards to the bifurcation of the common iliac the artery is filled with firm coagulum. The sac (now opened) is occupied by soft, grumous blood-clot, in which the outline of the diseased portion of the vessel can be readily traced. The femoral emerges from the lower margin of the aneurism, greatly reduced in size, but still quite pervious, and the epigastric and circumflex iliac branches of the femoral are also patent. Inseparably united to the sac, and lying to the inner side and a little behind it, is the external iliac vein. The sac proper is composed of the external tunic of the artery only, but is much thickened by adhesions to the surrounding soft parts, and thereby the outline of the aneurism is increased to about twice its true size. (*Presented by Professor R. O'Shaughnessy.*)

- 305.** A dried preparation of an aneurism of the external iliac artery, the size of a small orange. Three or four small sacculated pouches are developed from the primary or principal sac. The walls of the latter are thin and delicate, and on the anterior aspect exhibit a vertical laceration, an inch in length, which proved fatal. The artery above and below the tumour appears to be dilated. The deep epigastric and circumflex iliac arteries are seen to arise directly from the lower part of the sac.

- 306.** Aneurism of the left popliteal artery. The left common iliac, left internal, and external iliaes, the left femoral, and popliteal arteries, with their principal branches, have been preserved. The aneurismal tumour, now partially destroyed, was the size of a turkey's

egg, and very strongly adherent posteriorly to the ligament of Winslow. The sac was thin and imperfect, in part composed only of the condensed cellular and other soft tissues of the popliteal space. The mass of decolourized clot found in the sac represents in the preparation the exact situation of the tumour. The arteries have been imperfectly injected, and the parts so quickly decomposed that a good dissection was not possible; but the circulation in the aneurism seems to have been considerably lessened, if not completely obstructed, by the compression over the upper part of the femoral (see below) which was employed during life. The gluteal and sciatic branches of the internal iliac, the perforating branches of the profunda, and the articular branches of the anterior and posterior tibial arteries, are all very much enlarged.

The patient, J. W. M., a European seaman, aged 30, stated on admission into hospital that the aneurism "had appeared or developed spontaneously, he having received no injury, nor ever having suffered from syphilis, &c." The treatment adopted was perfect rest in bed, low diet, and compression over the femoral in Scarpa's triangle, at first digital and then instrumental. Complete consolidation of the tumour was effected, and the patient seemed to be progressing most favourably when he was attacked with typhoid fever, from which he died. (*Presented by* Professor H. C. Cutcliffe.)

307. Preparation showing a diffused aneurism of the left popliteal artery, about the size of an ordinary orange. From a native male patient, aged 25. The femoral, in Hunter's canal, was ligatured in the first instance, with the result that all pulsation in the aneurism ceased, and it apparently began to consolidate. But the skin covering the popliteal space became gangrenous. A small bulla first made its appearance, then gave way, leaving an unhealthy ulcer; this deepened, and at last exposed the sac, from which oozing, and afterwards formidable hæmorrhage, took place. The sac was now cut down upon, several large, laminated clots were removed, and an attempt made to ligature the ends of the vessels above and below the site of the aneurism. The ligatures, applied after great difficulty, did not control the hæmorrhage, and, as proved subsequently, were placed on the vein, not on the artery. The limb was therefore amputated at the lower third of the thigh, and the patient did well (recovered) after the operation. In the preparation, two white glass rods have been passed into the upper and lower ends, respectively, of the artery. The original aneurism, as traced from the diseased and torn condition of the arterial wall, seems to have been about the size of a walnut, but had subsequently become diffuse, and a false sac has been formed from the loose cellular tissue, &c., of the popliteal space.

The aneurism had existed for about two and a half months at the date of the patient's admission into hospital. During this period he has suffered a good deal from throbbing and lancinating pain in the ham, but was still accustomed to walk to his work daily,

i.e. four or five miles. There was no history of injury or strain. The man had, however, contracted syphilis about five years previously, which was followed by secondary eruptions and articular pains. (*Presented by* Professor K. McLeod.)

308. A preparation exhibiting the direct origin of the right and left carotid arteries from the arch of the aorta. The left subclavian arises in the ordinary situation, and is seen giving off the left vertebral, but the *right* subclavian artery springs from *left* extremity of the arch, and passes behind the trachea to its destination.

309. "Preparation showing unusual distribution of the renal arteries. The lumbar portion of the vertebral column with the kidneys and a portion of the abdominal aorta are *in situ*. From the *right side* of the aorta a common renal artery is seen to arise, which, about an inch outwards, divides into two trunks, of which the *superior* subdivides into four branches, and the *inferior* into two. These branches then enter the hilum. The ureter is seen between the two main trunks. Just below the inferior mesenteric artery, another artery arises, which, after describing a gentle curve, is directed upwards and eventually lost in the substance of the inferior extremity of the kidney.

From the *left aspect* of the aorta arise three distinct renal arteries, each of which subdivides into several smaller branches, which enter the hilum of the organ. The left spermatic artery springs from the most inferior trunk. The ureter lies between the superior and inferior trunks, whilst the middle one is situated behind it. This specimen was obtained from the body of a native male, in whom there appeared to have existed a highly developed condition of the vascular system; for, even with the common, coarse injection used in the dissecting-room, almost all the vessels in the various organs were filled to an unusual size" (Ewart). (*Presented by* Moulvie Tameez Khan, Khan Bahadur, late Demonstrator of Anatomy.)

310. "Specimen showing the 'middle thyroid of Neubauer,' arising from the arteria innominata, and running up in front of the trachea to the thyroid gland. Such an artery would seriously complicate the operation for tracheotomy" (Colles). (*Presented by* Moulvie Tameez Khan, Khan Bahadur.)

311. "The heart of a young native woman, who died of dropsy depending on disease of the abdominal viscera. The heart is healthy and well-formed, but the origin of the aorta lies to the left of and behind the infundibulum, and the arch crosses the bifurcation of the pulmonary artery from left to right. The innominate divides into the left carotid and left subclavian, and the right carotid and subclavian arise by separate origins" (Colles).

312. "Irregular origin of the left vertebral artery from behind and between the origins of the left carotid and subclavian. The right vertebral arises naturally" (Colles). (*Presented by* Babu Chunder Mohun Ghose, M.B., late Demonstrator of Anatomy.)

313. "Irregular origin of the vessels from the arch of the aorta. The arteria innominata divides into the two carotids. The left subclavian rises next, and behind and to the left of it rises the right subclavian, which ran behind the œsophagus to its own side of the neck" (Colles).
314. "Irregular origin of the left carotid from a short trunk, which also gives off the arteria innominata. The left subclavian rises regularly" (Colles).
315. The heart, arch of the aorta, and the lower part of the cervical spine, showing the abnormal origin of the left vertebral artery from the arch, between the left common carotid and subclavian arteries.
316. The arch of the aorta with only two branches arising directly from its transverse portion. These are the innominate and left subclavian arteries. The former gives off, about a quarter of an inch from its origin, the left common carotid artery, which then passed upwards to its usual position on the left side of the neck. Having ascended for an inch, the innominate divides regularly into the right common carotid and right subclavian. (*Presented by* Babu Chunder Mohun Ghose, M.B., late Demonstrator of Anatomy.)
317. An exactly similar specimen to No. 316. Found on the *post-mortem* examination of a native male, aged 50, who died from morbus cordis (mitral stenosis).
318. Another similar specimen. The left common carotid is seen to arise from the innominate, about three lines above the origin of the latter from the arch of the aorta, and an inch beyond this the innominate divides normally into the right carotid and subclavian arteries. Found on *post-mortem* examination of a native woman, aged 50, who died in hospital from acute hepatitis.
319. Arch of the aorta, showing four branches instead of three. There is no innominate artery. The right subclavian and right carotid arteries, like the corresponding brachio-cephalic vessels of the left side, arise directly and by separate and independent origins from the aorta.—From an Armenian (male), aged 40, who died in hospital from opium-poisoning.
320. "The right brachial artery, from a subject in the dissecting-room, showing a division of the vessel about half an inch below the origin of the superior profunda. The smaller of these gives off the inferior profunda and anastomotica, and then unites with the larger branch to re-form a single brachial artery, which immediately bifurcates into ulnar and radial arteries. The median nerve passed out between the two trunks" (Colles). (*Presented by* Babu Chunder Mohun Ghose, M.B., late Demonstrator of Anatomy.)
321. "Irregular distribution of the right radial artery. From a European seaman. About two and half inches above the lower end of the radius, the radial artery gives off the superficial volar branch, which is larger than usual; the radial then turns outwards and downwards till it reaches the outer border of the radius, rather to its posterior aspect, and proceeds downwards

and slightly inwards to the interval between the first and second metacarpal bones. It crosses the extensor tendons of the thumb on their superficial aspect, and runs behind them for nearly two inches. The superficial volar gives off the anterior carpal branch as well as the external dorsal artery of the thumb. There is no superficial arch, the ulnar supplying all the branches as is often the case. The deep palmar arch and the other arteries of the hand and forearm are normal" (Colles).

- 322.** Irregular formation of the circle of Willis at the base of the brain. The left middle cerebral artery gives off a large branch, which passes forwards and divides into the two anterior cerebral arteries. There is no anterior communicating artery, and only indirect anastomotic communication between the right middle and anterior cerebral vessels. On the left side again, the posterior communicating artery is normal, as also the left posterior cerebral, which, however, is more like a continuation of the basilar. On the right side there is no posterior communicating artery, but the middle cerebral gives off the right posterior cerebral, and the latter communicates with the basilar by a very delicate and minute artery. The basilar itself is formed by the coalescence of the vertebrals, but as it lay upon the pons was observed to have a peculiar curved or S-shaped outline. From a native woman, Nasiban, aged 38, who died in hospital from chronic Bright's disease, &c. (*See* also preparation No. 295a from the same patient.)
- 323.** Abnormally-formed circle of Willis, with slight atheroma of its larger vessels, particularly of the middle cerebral arteries. These arteries give off the posterior cerebral arteries instead of the posterior communicating, while minute branches passing forwards and outwards from near the point of the basilar on either side complete the anastomotic circle.—From an aged East Indian (male), who died from dysentery.
- 324.** Atheromatous circle of Willis, with a somewhat peculiar formation of the same. The left posterior communicating artery is unusually large, and takes the place in distribution of the posterior cerebral of this side, while the basilar artery only gives off two small branches to the left and a large right posterior cerebral.—From an aged European (*ætat* 75), who died in hospital from chronic dysentery.
- 325.** "Wound of the femoral vein. At the lower part of the preparation there are two incised wounds, opposite each other, as if the vessel had been penetrated by a sharp instrument. The artery is uninjured" (Ewart). (*Presented by* Professor Eatwell.)
- 326.** Left femoral artery and vein. About an inch and a half below the profunda femoris, a ligature is seen enclosing the main artery, and has also accidentally included the adjacent portion of the femoral vein. The latter shows evidences of phlebitis. It is said to have been found "full of pus." Its walls are thickened and closely adherent to the artery.—From a case of amputation of the thigh. The patient died from pyæmia, the result of the implication of the vein.

327. A preparation showing inflammation of the axillary vein after ligature of the same, and of the artery, in an amputation at the shoulder-joint for gunshot injury to the arm. The thickened condition of the walls of the vessel are well seen, as also the presence of a softening thrombus within its channel, reaching backwards from the site of the ligature for an inch and a half to the first large collateral branch above, which is indicated by a red glass rod. The axillary artery appears to be healthy,—its internal and middle coats have been divided by the ligature.
328. The popliteal artery and vein, from a case of traumatic aneurism of the former, for which both vessels were ligatured after amputation of the leg. The arterial walls are seen here and there irregularly thickened from atheromatous changes. The vein was found in a state of acute inflammation, its walls thickened, and lining membrane clouded, its channel occupied by a softening thrombus (the remains of which can still be seen) and puriform fluid.
329. A preparation showing the result of the application of an elastic bandage for the purpose of keeping up extension of the joint, after the adhesions had been broken down under chloroform, in a case of fibrous ankylosis of the knee. Gangrene of the foot and leg ensued, from which the patient, a native male, aged 30, died. The walls of the popliteal vein are thickened. Its lining membrane in the fresh state, presented a dark purple ecchymosed condition. It contains a softening fibrinous thrombus, about two and a half inches in length. The popliteal artery, compressed at the same spot, also shows some thickening of its walls, but contained no thrombus. (*See further, "Surgical Post-mortem Records," Vol. I, 1878, pp. 535-36.*)
330. "Plugging of the saphena vein in two places by coagulum. In the inferior part of the specimen the thickened vessel is laid open, exposing a coagulum more or less broken down. At the upper portion the pyramidal end of the second clot is observed. The internal tunie is very opaque, greatly increased in thickness" (Ewart).
331. "The external iliac vein containing a coagulum. At the upper part of the specimen this is hollowed out." It has formed immediately above a valve placed in this situation. "Below this point the coagulum is smaller and does not nearly fill the vein. The thickening of the upper two inches is well marked, contrasting remarkably with the remainder.—From a man who died with pyæmia" (Ewart).
332. "A portion of the femoral vein from the same subject, with a coagulum *in situ*. Purulent matter was found between this and the parieties of the vessel, which were much thickened. This and the preceding specimen were taken from a man who had sustained an injury to the left tibia. The veins leading from the inflamed bone, and also the popliteal vein, were arterial in the thickness of their coats, and completely occupied by creamy, landable-looking pus" (Ewart). (*Presented by Professor J. Fayrer.*)

- 333.** Left femoral and profunda veins with their corresponding arteries. The former are seen occupied by "red coagula" (thrombi), pretty closely adherent to the walls of the vessels, which are dilated and rigid.

The patient, a European (Greek), died in hospital from abscess of the liver. For some days before death there was much œdema and swelling of the left leg, evidently due to the thrombosis of these veins.

- 334.** Thrombosis of the left femoral, profunda, and external iliac veins. These vessels are seen occupied, and even distended by, moderately firm, dark-red coagula.

The patient, a native male, aged 60, died from granular disease of the kidneys with general anasarca. It was noticed during life that the left leg and thigh were especially firm, œdematous, and swollen, and that these conditions persisted in spite of repeated acupuncture.

- 335.** Suppurative thrombosis of the femoral vein. A specimen taken from a case of pyæmia following amputation of the left thigh. The walls of the vein are thickened, soft, and vascular, occupied by a softening and puriform thrombus, which extended from the stump through the whole length of the vein, and reached even up to the bifurcation of the left common iliac vein, where it was replaced by dark, *post-mortem* clotting. The left femoral artery, preserved with the vein, is healthy. From a native male, aged 30. ("Surgical *Post-mortem* Records," Vol. I, 1880, pp. 663-64.)

- 336.** A decolourised, hollow thrombus, removed from a large uterine vein in the right broad ligament. From a native women, aged 30, who died about eighteen days after abortion with subsequent flooding. All the organs of the body were pale, anæmic, and exsanguine. The heart showed patches of yellowish discolouration in the left ventricle, and the muscular tissue here was found in a state of advanced fatty metamorphosis.

- 337.** Extensive thrombosis with contraction and solidification of the inferior vena cava, from its origin at the junction of the common iliac veins to its termination in the right auricle. Opposite the renal vein the cava is enlarged so as to form an oval, tumour-like swelling, rather larger than a pigeon's egg. This, on section, reveals a firm decolourised clot (? an embolus), firmly impacted within the walls of the vein, with which it has acquired intimate connections. It has a pale-yellowish colour, and smooth marbled appearance. Examined microscopically, consists of altered blood-corpuscles only:—these are found shrivelled, contorted, and fragmentary, with also much blood-pigment (hæmatin), but no morbid or extraneous cell-elements. The coats of the vein at the seat of obstruction are three or four lines in thickness, much condensed and resistant. The renal vein (opened from behind,) is seen pervious up to the point of union with the cava, where it is abruptly closed. The vena cava below the clot is quite impervious, its walls thickened and fibrous-looking as far down as the common iliac veins. These are also in great part occluded

by delicate, yet firm, fibrinous bands stretching across their channels. Above the clot, the cava exhibits the same conditions; is contracted, and has the appearance of a firm, fibrous cord up to the auricle. In the auricle a large, rounded, decolourised coagulum extends from the appendix downwards and inwards through the auriculo-ventricular opening into the right ventricle; here it becomes thinner, more flattened, and passes upwards into the pulmonary artery. No history of the case has been preserved with this preparation. (*Presented by Professor Edward Goodeve.*)

338. The common and profunda femoral veins showing thrombosis of the latter, with prolongation of the thrombus into the canal of the common femoral, and its rounded expansion there. The coagulum is firm, fibrinous, and partially decolourised.—From a native male, aged 35, who died from cirrhosis of the liver with ascites, and marked anasarca of the left leg and thigh, while, on the right side, there was but slight œdema of the foot and leg,—the thigh normal. (“*Medical Post-mortem Records*,” Vol. II, 1876, pp. 13-14.)
339. The right common iliac, external iliac, and femoral veins, showing the presence of an *ante-mortem*, fibrinous clot or thrombus, which is partially organized, and has completely occluded these vessels. There was marked solid œdema during life of the right thigh, leg, and foot, while the left lower extremity remained normal.—From a native female, aged 45, who died from cerebral softening and scirrhus of the liver. (“*Medical Post-mortem Records*,” Vol. II, 1877, pp. 357-58.)
340. Thrombosis of the common and deep femoral veins, from a case of moist gangrene of the foot,—a native male, aged 32, who died in hospital. The thrombus or coagulum is decolourised, and shows central puriform softening. It is closely adherent to the walls of these vessels, which are unusually firm and thickened, and the lining membrane has lost its natural transparency and smoothness. (*See further*, “*Surgical Post-mortem Records*,” Vol. I, 1879, pp. 333-34.)
341. Several large, *ante-mortem*, partially decolourised, and incipiently softening thrombi found obstructing the recto-vaginal and vesico-vaginal plexuses of veins, in a native woman, aged 60, who died from dysentery and acute suppurative nephritis. (“*Medical Post-mortem Records*,” Vol. II, 1876, pp. 33-34.)
342. A specimen exhibiting acute inflammation of the right spermatic veins, which, at one part, have formed a kind of cluster or bunch about the size of half a walnut. This was situated just above the brim of the pelvis, and, on incision, the dilated veins were found filled with thick, yellow pus. There was hydrocele of the right tunica vaginalis, which, about a month previously, had been tapped and injected. The sac had a healthy organising appearance, and the testicle was normal, yet the phlebitis seemed attributable to no other cause.—From a European, aged 40, who died from serous apoplexy. (*See further*, “*Medical Post-mortem Records*,” Vol. III, 1880, pp. 693-94.)

343. Acute suppurative phlebitis associated with pyæmia. The preparation shows the urinary bladder, which itself is healthy, but the loose cellular tissue around the neck, for the space of about two and a half inches, is much swollen, and of brawny hardness. The vesico-prostatic plexus of veins is seen much dilated, and occupied by dark-red, cylindriciform thrombi, or thick, purulent, broken-down blood-clot. The inner surface or lining membrane of these vessels is very vascular and soft. There were multiple pyæmic infarctions and points of suppuration in both kidneys, and several small, circumscribed abscesses in the lungs.—From a native male, aged 30, admitted with compound comminuted fracture of the metatarsal bones of the foot, followed by sloughing, and eventually by symptoms of blood-poisoning. (*"Surgical Post-mortem Records,"* Vol. I, 1880, pp. 673-74.)

344. Venous aneurismal tumour removed from the axillary region of a Hindu, Saroda, aged 45.

This sac or cyst is about the size of the foetal head. A small portion of it was cut away during the operation (the rent has now been stitched), and, at one part, is a rounded opening, capable of admitting the little finger, which is the orifice of communication of the sac with the axillary vein. The latter was ligatured above and below this spot, on the separation of the tumour. The cyst contained only fluid blood, no coagula. On examining its interior, there is found a layer of reddish, grumous, soft material, two to three lines in thickness, unequally distributed over the cyst wall. This material is easily scraped away, and consists of fibrin, showing no lamination or decolourisation, and presenting under the microscope only altered blood-corpuscles, broken up and shrivelled, with much dark, amorphous pigment-matter, and a few hæmatoidin crystals. When this material is scraped away, the inner surface of the sac or cyst is seen to be smooth and shining, *i.e.* has a distinct lining membrane,—the flattened, tessellated, and nucleated epithelial cells composing which can quite readily be recognized under the microscope. The rest of the cyst-wall consists of well-formed, fibro-elastic tissue, with also smooth muscular tissue; in fact, seems quite identical with the ordinary structure of the walls of a vein; so that there can be no doubt that the sac was an aneurismal-like expansion from or of the axillary vein, and is not an adventitiously-formed cyst. There are no dissepiments, or any indications of such, in the interior of the sac.

The duration of the growth was about two months. The patient at first noticed a swelling about the size of a common betel-nut in the left axilla. It was soft, painless, and caused but little inconvenience; has slowly increased to its present size. There was no distinct history of injury or strain. Had syphilis when sixteen years of age, and was treated by mercury. Had since then considered himself a very healthy man. (*Presented by* Professor K. McLeod.)

CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART IV.

INJURIES AND DISEASES OF THE LARYNX,
TRACHEA, BRONCHI, AND BRONCHIAL
GLANDS; OF THE LUNGS AND PLEURA.

INJURIES AND DISEASES OF THE BRAIN
AND SPINAL CORD, WITH THEIR MEM-
BRANES AND BLOOD-VESSELS; ALSO OF
THE NERVES.

SERIES VII AND VIII.

SERIES VII.

INJURIES AND DISEASES OF THE LARYNX,
TRACHEA, BRONCHI, AND BRONCHIAL
GLANDS; OF THE LUNGS AND PLEURA.

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† Syphilitic.

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1. Fracture of the thyroid and cricoid cartilages in an aged Armenian woman. These cartilages, the epiglottis, and the rings of the trachea are seen to have undergone calcareous degeneration, so common at an advanced period of life, and are quite hard and rigid. (Webb's *Pathologia Indica*, No. 395, p. 135.) (*Presented by* Professor R. O'Shaughnessy.)
2. A preparation showing the injuries inflicted upon the windpipe in a case of attempted suicide by cut-throat. The epiglottis has been severed, together with the root of the tongue, the section passing through the thyro-hyoid membrane. Death occurred from the subsequent inflammation and œdema of the rima glottidis, the tumefied condition of which is still to be observed. (Webb's *Pathologia Indica*, No. 548, p. 135.)
3. "Larynx of a cut-throat." The incision has been made through the thyro-hyoid membrane, severing the epiglottis, but leaving the thyroid cartilage uninjured.
4. "Portions of a 'Koi' fish, which caused suffocation in a child by becoming lodged in the fauces. The fish slipped into the mouth of the child while he was playing with it. Tracheotomy was performed, but too late to save life." (Colles.) (*Presented by* Professor S. B. Partridge.)
5. The larynx of a native child, opened from behind, and showing the claw of a crab impacted in the rima glottidis. It is lying longitudinally.
History of the case by Dr. Baillie.—"Kokan, an infant under one year of age, was brought to the native hospital on the 14th of August 1866, late at night, having swallowed the claw of a crab which had been given it to suck. About six hours had elapsed since the accident. Breathing was extremely difficult, and every inspiration accompanied by a loud wheezing noise. I was about to open the trachea, and had divided the skin, when respiration was found to have stopped. The foreign body seen in the specimen is just as it was found. The broken portion of the claw was fractured on passing a director through the trachea after death." (*Presented by* Dr. Herbert Baillie.)
6. "Extreme œdema of the glottis and epiglottis. The dorsum of the tongue and the diseased parts are observed from behind. The epiglottis is hard and enormously swollen, and so are all the parts about the glottis. This great swelling has effectually closed the

larynx." (Ewart.) Laryngotomy was apparently performed. No history. (*Presented by Professor Allan Webb.*)

7. The larynx and upper part of the trachea of a native male patient, aged 32.

There is great œdema of the aryteno-epiglottidean folds of mucous membrane, especially on the right side. Besides which, in the fresh state, the mucous membrane of the larynx generally had a dark gangrenous appearance, and was much softened. The cricoid cartilage is completely necrosed and separated into two pieces. In the opening into the windpipe, made by the operation, the cricoid cartilage and first two rings of the trachea have been divided. The false vocal cords (and the mucous membrane between the cords) are swollen and œdematous. The lining membrane of the trachea much thickened and somewhat roughened.

The patient died from acute suppuration (pyæmic) and gangrene of the lungs.

8. The larynx of a Mahomedan lad who was brought into hospital in a moribund condition suffering from acute laryngitis, with great difficulty of respiration and impending asphyxia. Laryngotomy was immediately performed, but only proved temporarily beneficial. On opening the larynx, at the *post-mortem* examination, the rima glottidis was found greatly contracted, its margins highly congested, swollen, and œdematous; the under surface of the epiglottis and the aryteno-epiglottidean folds participating in these morbid changes. The trachea was healthy.

9. Œdema of the glottis supervening rapidly, and ending fatally in a very short time, in a case of adynamic remittent fever. The patient was a young Cabullec (male), aged 22. The aryteno-epiglottidean folds and the mucous membrane investing the arytenoid cartilages are seen to be greatly tumefied, and, in the recent state, almost completely obstructed the glottis.

10. Acute œdema of the larynx. The mucous membrane on both surfaces of the epiglottis, that of the aryteno-epiglottidean folds, and that of the larynx as low down as the true vocal cords, is swollen, much thickened, and of a pale whitish colour. So great was the œdema that the rima glottidis was almost occluded,—a mere chink. On the anterior aspect of the trachea, a little to the right of the median line, is the incision made in the operation of laryngo-tracheotomy. It is about an inch in length, and cuts through the crico-thyroid membrane, cricoid cartilage, and first ring of the trachea. From a native male patient, aged 48. (For further particulars see "*Surgical Post-mortem Records*," vol. I, 1875, pp. 97-98.)

11. The larynx and trachea of a native (male), aged about 24 years, who died from pneumonia following the operation of tracheotomy. The latter was performed for the relief of acute laryngitis. An abscess, the size of a walnut, had formed in the loose cellular tissue on the left side of the crico-thyroid articulation, from which, apparently by direct continuity of tissue, the inflammatory process had spread to the interior of

the larynx. Moreover, the terminal filaments of the left recurrent laryngeal nerve were traced (*post-mortem*) directly into the abscess, and this would probably account for the repeated attacks of suffocative spasm from which the patient suffered, and which necessitated eventually operative interference. Considerable portions of the cricoid and thyroid cartilages are denuded of perichondrium, and there is unilateral inflammatory œdema of the lining membrane of the larynx, extending from the abscess to the upper margin of the left aryteno-epiglottidean fold.

12. The larynx and a portion of the trachea showing acute œdema of the aryteno-epiglottidean folds and lining membrane of the larynx, as also the incision made through the cricoid cartilage and upper two rings of the trachea in the operation of laryngo-tracheotomy. The subject, a native boy, aged about 15, was a patient in hospital, under treatment for chronic enlargement of the spleen and intermittent fever; was very weak and debilitated. The laryngeal œdema set in quite suddenly on the evening of the 3rd June 1876, and within an hour and a half threatened suffocation. The operation was at once performed, and gave immediate relief. The patient survived for 42 hours, and then died from simple exhaustion.
13. A preparation exhibiting (1) acute œdema of the mucous membrane of the larynx, especially of the aryteno-epiglottidean folds and sacculus laryngis; (2) the opening made into the windpipe during life for the operation of laryngotomy, situated quite below the seat of obstruction. The patient, Ram Dass, a Hindu, aged 25, died from acute bronchitis after the operation. (*See further, "Surgical Post-mortem Records," vol. I, 1879, pp. 637-38.*)
14. Acute œdema of the epiglottis and aryteno-epiglottidean folds. The former is very rigid and swollen, especially its left half, which, moreover, along the outer edge of the cartilage is ulcerated, the ulcerated portion being about four lines in length and two lines in depth. The aryteno-epiglottidean folds and the mucous membrane investing the arytenoid cartilages are greatly swollen, œdematous, and were, in the fresh state, of a livid purple colour. Along the superior margin of the right fold are two small shallow ulcers, each about the size of a split pea. The mucous membrane of the rest of the larynx was found a little swollen and vascular; the vocal cords unaffected. From a native male, aged about 40, who was brought to the hospital in a moribund condition, and died within thirty hours of admission. There was acute pericarditis and double acute pleurisy.
15. A very marked example of acute œdema of the larynx. The whole of the epiglottis is enormously swollen, vascular, and rigid. The mucous folds reaching from it to the arytenoid cartilages are greatly thickened and foreshortened, and the lining membrane of the larynx generally is thickened and puffy. The orifice of the glottis was found almost completely obliterated. Tracheotomy was performed during life, but the patient, a native

- (male) aged 20, died from hypostatic pneumonia following the operation. (See further, "Surgical *Post-mortem* Records," vol. I, 1880, pp. 731-32.)
16. Larynx of a child showing the remains of a filmy eroupal membrane and considerable œdema of the aryteno-epiglottidean folds. No history.
 17. A preparation of the fauces, larynx, and trachea of a European, aged 33, who died from diphtheria. Both tonsils are swollen, superficially ulcerated, and semi-gangrenous. The epiglottis and aryteno-epiglottidean folds of mucous membrane are highly thickened and œdematous. A leathery false membrane invested these parts, reaching from the fauces into the larynx, and downwards to nearly the bifurcation of the trachea. Fragments of this membrane are still to be seen, though much of it has disappeared under maceration. Laryngotomy was performed eleven hours after admission into hospital on account of urgent dyspnœa. The opening into the windpipe is indicated by a curved hollow glass tube. The patient was much relieved by the operation, but died from general exhaustion about twelve hours after its performance.
 18. Specimen showing the fauces, larynx, trachea, and lungs of a European child, aged four years, who died from diphtheria after an illness of four days. The tonsils, epiglottis, the whole of the inner surface of the larynx, and the upper part of the trachea were found covered with a well-formed membrane, the shreddy remains of which still exist. Asphyxia being imminent, tracheotomy was performed (the opening is seen in the preparation), but the child never rallied. The lungs and bronchi were found highly congested, of a vermilion red colour in the recent state. "Although the vocal cords are covered and obscured by false membrane, the child could articulate to within an hour and a half of death." (Ewart.)
 19. The fauces and larynx of a European male patient who died in hospital from diphtheria. Both tonsils are swollen and ulcerated; the right is covered by the shreds of a thick, leathery, fibrinous membrane, which, investing also both surfaces of the epiglottis, entered the larynx, and, in the fresh state, could be traced throughout this cavity, overlying the mucous membrane. It was thicker on the right than on the left side, and was continued downwards as a thin pellicular film into the trachea and both bronchi. The right pillar of the glottis and the right vocal cords are much swollen and œdematous, and the rima glottidis greatly contracted in consequence. On the anterior aspect of the preparation is the opening made during life through the crico-thyroid cartilage and first two rings of the trachea (laryngo-tracheotomy). (See further, "Surgical *Post-mortem* Records," vol. I, 1879, pp. 555-56.)
 20. A preparation showing the *post-mortem* appearances of the fauces, trachea, and lungs in a fatal case of diphtheria. The soft palate and tonsils are seen partially invested by a thick sloughy exudation (false membrane), which can be peeled off pretty

readily with the forceps. The uvula is completely covered by the same. Both tonsils are ulcerated. The mucous membrane at the base of the tongue, and that of the pharynx generally, has a dark purple congested appearance.

The epiglottis and the aryteno-epiglottidean folds are much swollen and thickened, and here and there invested by the remains of a shreddy membrane. The whole of the interior of the larynx is lined by the same. At the centre of the anterior surface of the trachea is the opening made into the windpipe during life. The cricoid cartilage and first three rings of the trachea have been cut through. Below this opening the membranous exudation is again seen forming a complete mould or cast of the lower end of the trachea. It is about two lines in thickness, and of the colour and consistency of a decolourised cardiac clot. Is loosely adherent to the inner surface of the trachea, and can readily be detached with the forceps. The mucous membrane beneath it presented (in the recent state) a raw-looking, roughened, minutely ecchymosed condition. This same membrane extends into the bronchial tubes, and may be tracked into their minute branches,—almost to the periphery of the lungs.

Portions of the diphtheritic membrane examined microscopically were found to consist of closely packed, very numerous leucocytes, with one, two, or three sharply-defined nuclei, red blood-corpuscles, blood-colouring matter, a large number of free nuclei (bioplasts), and here and there a few altered and degenerate epithelial cells. All these cell elements were held together by finely filamentous, granular, basis-substance, evidently fibrin or fibrinous in character.

Obstructing completely the left bronchus, and extending for about an inch into the trachea, is a narrow twisted plug of bandage-cloth, which, being employed for occasionally cleaning out the tracheotomy-tube, was accidentally sucked into the windpipe when being thus used by the brother of the patient. Every endeavour was made to remove this foreign body, but unsuccessfully, the boy dying asphyxiated while manipulations for this purpose were being carried out. Both lungs, but particularly the left, were found collapsed. Their surfaces, as well as the deeper pulmonary tissue, exhibited patches of ecchymosis and minute blood extravasations. The subject was a native boy, aged about ten years. Was admitted into the hospital on the 18th July 1878. Tracheotomy was performed the same afternoon. He died suffocated on the 21st July 1878.

21. Superficial ulceration of the whole of the mucous membrane of the larynx, including the false vocal cords. On the right side perforation, with the formation of a small abscess between the cricoid and thyroid cartilages, has taken place. The perichondrium investing the latter has been removed over a limited area.

22. "Larynx of Owen, O., admitted 8th February 1864, died on 16th March 1864, with symptoms of laryngeal phthisis. The larynx is opened along the median line on the posterior aspect."

The interior of the larynx exhibits extensive ulceration of the under surface of the epiglottis, of the vocal cords—the superior of

- which have been almost entirely destroyed—and of the lining membrane of the upper part of the trachea.
23. "Larynx of G. L., a Swede, who died of pulmonary and laryngeal phthisis." There is extensive ulceration of the interior of the larynx, laying bare the arytenoid cartilages. The vocal cords are involved, and the mucous membrane immediately below them deeply excavated.
 24. Tubercular ulceration of the larynx. The mucous membrane lining the thyroid cartilage, from the base of the epiglottis to the vocal cords, and including the upper margin of the "false" cords, is seen pitted and ulcerated, the disease extending on the left side into the sacculus laryngis, and adjacent portion of the "true" vocal cord. Lower down, in the trachea, may be seen two or three sharply-defined rounded ulcers, involving the whole thickness of the mucous coat. They are indicated by small glass rods. From an East Indian, aged 48, who died in hospital. He was much troubled "with fits of spasmodic dyspnoea."
 25. Extensive ulceration—probably syphilitic—of the interior of the larynx. The preparation shows a deep excavated ulcer occupying the centre and left half of the mucous membrane lining the thyroid cartilage, the latter being partially softened, and a portion of it necrosed. On the anterior aspect is seen the opening made in the operation of laryngo-tracheotomy for the relief of urgent dyspnoea, which, in this case, suddenly supervened. The patient, a European, aged 44, died from broncho-pneumonia on the eighth day after the operation.
 26. Syphilitic ulceration of the larynx and trachea. There is a little superficial roughening of the mucous membrane of the larynx, but the disease really commences at the lower border of the thyroid cartilage, and thence extends downwards. The ulceration affects the left half of the tracheal tube more than the right. A series of deep, transversely-placed ulcers are seen here, involving the mucous and submucous tissues, and exposing the cartilaginous rings. The patient was aged 35. He suffered from "distressing asthma during life." Marked syphilitic thickening of the capsule of the liver, and some nodular growths in the substance of this organ, were found on *post-mortem* examination. (*Presented by Dr. MacLeod.*)
 27. Laryngeal phthisis. The larynx of a patient who had long suffered from huskiness of voice, and was greatly emaciated. The right half of the laryngeal cavity is seen to be principally affected. Both vocal cords on this side are entirely destroyed—are represented only by thickened tuberculated tissue. The right aryteno-epiglottidean fold has been perforated; an opening, rather larger than a 4-anna piece, and with an irregular indurated margin, leads into a cavity the size of a hen's egg, situated external to the larynx. This cavity is bounded behind by the cricoid and right ala of the thyroid cartilage, externally and in front by the thyro-hyoid membrane, and above by the epiglottis and roof of the tongue. It was half filled with recent,

soft, blood-coagulum, and contained also much mucopurulent offensive fluid. Its walls are ragged and composed of shreddy, flocculent, disorganising tissue. At the bottom of this cavity was found the superior laryngeal branch of the superior thyroid artery, laid open by ulceration. The patient died suddenly from severe hæmoptysis, the blood no doubt issuing from the vessel above referred to. The laryngeal thickening and ulceration is tubercular in character.

A small deposit of partially caseous tubercle was found at the posterior margin of the superior lobe of the right lung. Diffusely disseminated throughout both lungs were a very large number of isolated or circumscribed, dark-red nodules, varying in size from a pea to a hazel-nut (pulmonary apoplexy). Both bronchi were filled with bloody frothy fluid. A little fluid blood was also found in the stomach, the mucous membrane of which was healthy; and a few pale, circular, characteristically tubercular ulcers in the lower third of the ileum. (*Presented by Professor D. B. Smith.*)

28. Larynx exhibiting extensive tubercular ulceration and thickening of the mucous membrane, and destruction of the false vocal cords. The disease involves the entire lining membrane, from the under surface of the epiglottis (the margins of which are indurated and rigid) to the level of the true vocal cords. The ulceration is deeper on the left than on the right side, and affects the mucous membrane of the trachea also, on that side, for an inch below the cords.—From a Mahomedan (male), aged 30, who died from phthisis.
29. Syphilitic laryngitis in a young native female. The epiglottis is abnormally rigid; the mucous membrane on its under surface superficially ulcerated. The aryteno-epiglottidean folds are thickened, and the false vocal cords partially destroyed. (*Presented by Professor H. C. Cutcliffe.*)
30. Phthisis laryngea. The larynx and trachea of a European seaman who died from pulmonary phthisis. Both true and false vocal cords on the right side have been completely destroyed by tubercular ulceration, which extends deeply into the sacculus laryngis on this side. The mucous membrane of the trachea presents numerous small, shallow, superficial ulcers, none of them much larger than a hemp seed.
31. Syphilitic laryngitis. The right half of the epiglottis, and of the lining membrane of the larynx, as far as the right false vocal cord, present a greatly thickened and ulcerated condition, which also extends to the cul-de-sac between the thyroid cartilage and pharynx on the same side. This space was occupied by brownish, thick, grumous-looking secretion, which could also be traced throughout the larynx and trachea into the right bronchus, the latter being almost occluded by the same. The arytenoid cartilage on the right side is thickened and rigid. The right aryteno-epiglottidean fold has been completely destroyed. The glottis was greatly encroached upon, and reduced to a mere slit. The mucous membrane below the vocal cords is healthy. (There was a well-marked cicatrix on the under surface of the glans penis, and the glands in both groins were slightly enlarged.)

The patient was a Hindu, aged 53, by occupation a blacksmith. (See further, "Surgical *Post-mortem* Records," vol. I, 1875, pp. 215-16.)

32. The larynx of a Chinaman, aged 28, who died from tubercular phthisis. On the under surface of the epiglottis there are several sharply-defined shallow ulcers. The posterior half of the left true vocal cord, and the adjacent portion of the false cord above it, are deeply ulcerated, and there is a deep, punched-out looking ulcer at the retiring angle of the thyroid cartilage, near the point of junction of the vocal cords anteriorly. A few small superficial ulcers can be traced into the trachea. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 81-82.)
33. Larynx showing extensive tubercular ulceration of the mucous membrane from the under surface of the epiglottis to below the vocal cords. The epiglottis itself is swollen and rigid. There is superficial ulceration of both aryteno-epiglottidean folds, more marked on the left than on the right side. The lining membrane of the larynx is most deeply affected at the anterior angle of the thyroid, near the junction of the vocal cords. Superficial patchy ulceration extended all through the trachea. From an East Indian, J. M., aged 30, who died in hospital from pulmonary phthisis and enteritis. ("Medical *Post-mortem* Records," vol. III, pp. 191-92.)
34. The larynx of an East Indian (male), aged 45, who died from phthisis, exhibiting an oval-shaped ulcer, rather larger than a 2-anna piece, on the under surface of the epiglottis. The edges of the ulcer are somewhat hard and elevated, the base rough, excavated, partially exposing the cartilage. It is undoubtedly tubercular.
35. Syphilitic ulceration of the larynx. The mucous membrane on the inferior surface of the epiglottis, and that lining the larynx, especially on the right side, as low down as the true vocal cords, is seen eroded and ulcerated. The right false vocal cord has been completely destroyed. Under the epiglottis, near its right margin, is a deep excavation, the size of a split pea, exposing the cartilage. Its edges are sharply defined and a little thickened.—From a European male, aged 39.
36. Tubercular ulceration of the larynx, from a native male, aged 25, brought to the hospital in a moribund condition, and who died within twenty-four hours of admission. The right half of the epiglottis has been entirely destroyed. The cartilage is exposed, and the glosso-epiglottidean fold of mucous membrane presents an irregular-outlined ulcer about the size of a 2-anna piece. The aryteno-epiglottidean folds are thickened and œdematous. The mucous membrane of the whole of the larynx is rough, granular, and ulcerated; this condition extending downwards to the false vocal cords, destroying them completely, and also the posterior half of the right true vocal cord. ("Medical *Post-mortem* Records," vol. III, 1880, pp. 605-606.)
37. "Abscess between the crico-arytenoid muscle and posterior surface of the cricoid cartilage. The latter is denuded and slightly eroded." (Colles.) (Presented by Professor Chuckerbutty.)

38. Acute laryngitis with *sloughing* of the mucous membrane lining the upper half of the inner surface of the thyroid cartilage, including the false vocal cords, and portions also of the true cords. From a native male, aged 30, who died in hospital. (*See further, "Surgical Post-mortem Records,"* vol. I, 1878, pp. 491-92.)
39. Larynx of a boy showing thickening of the epiglottis, aryteno-epiglottidean folds, and mucous membrane of the larynx above the true vocal cords, the result of chronic inflammatory changes. No history. (*Presented by Dr. Chuckerbutty.*)
40. The larynx of a patient who died in hospital. The epiglottis, aryteno-epiglottidean folds, and mucous membrane of the larynx generally, are much thickened. There is considerable ulceration of the posterior and right wall of the larynx. A large portion of the thyroid cartilage is exposed, denuded of perichondrium, and necrotic. The mucous membrane of the trachea, in the recent state, was lividly congested.
41. Chronic syphilitic laryngitis. The epiglottis is somewhat rigid and thickened. The lining membrane of the larynx, on its anterior aspect, and on either side of the median line, is ulcerated. The ulcers are sharply defined, each about the size of a 2-anna piece, and involve the false vocal cords. The true vocal cords are unaffected, and the trachea healthy. The patient, a native male, aged 35, gave a history of having had hard chancre about three years previously, followed by "secondaries." His condition improved much under specific treatment; but, while in hospital, he was attacked with acute pericarditis, from which he died. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 729-30.)
- 41a. Chronic syphilitic laryngitis and pharyngitis. The mucous membrane of the pharynx presents here and there an irregularly thickened, cicatricial condition. The left aryteno-epiglottidean fold is drawn outwards and fixed to the outer wall of the pharynx; a puckered cicatrix existing here. On the same side, the left half of the epiglottis is deeply fissured and rigid. The mucous membrane of the larynx is superficially eroded and thickened as far down as the false vocal cords, especially on the left side. Below this, the true vocal cords are thinned and yellowish, and the left cord shows a transverse splitting with separation of a portion of its structure about a line in thickness. The trachea is healthy.
From a native male patient (Bhulloo), aged 25, who died in hospital. There was great difficulty experienced in swallowing, especially fluids; and almost complete aphonia. (*See further, "Medical Post-mortem Records,"* vol. III, 1880, pp. 737-38.)
42. The larynx and trachea of a native male patient, aged 26, upon whom the operation of tracheotomy was performed on admission into hospital in a suffocated condition. The incision in the trachea is seen to have divided the upper six rings. The cause of the obstruction was found on *post-mortem* examination to be an abscess, the size of a pigeon's egg, situated between the larynx and pharynx (*see preparation*), and surrounding the posterior

half of the thyroid cartilage, which has almost completely necrosed. This abscess extends laterally for a short distance between the superior and middle constrictors of the pharynx, and by its pressure inwards and forwards must have greatly diminished the rima glottidis.

43. A preparation exhibiting necrosis of the cricoid cartilage. From a Hindu, aged 32, who was admitted into the Mayo Hospital with symptoms of urgent dyspnoea, and died three hours afterwards. There was no external swelling of the throat, but pain complained of when the larynx was manipulated. No congestion, ulceration, or deposit could be discovered on examination of the fauces. No previous history of laryngitis or of syphilis could be ascertained, only the statement that there had been "fever" with dyspnoea for fifteen days. There were fine crepitant râles at the bases of both lungs and much dulness on percussion here, so that, although tracheotomy was thought of, the operation did not promise any relief owing to the embarrassed condition of the lungs, and was therefore not performed.

On *post-mortem* examination "an abscess was found round the cricoid cartilage, and, on probing, necrosis of the cartilage itself was felt. There were a few patches of congestion of the mucous membrane below it; the posterior and lower parts of both lungs were hepatized."

In the preparation the posterior half of the cricoid cartilage is seen isolated, rough, bare, and completely necrosed. The mucous membrane of the larynx, and especially that investing the arytenoid cartilages, is swollen and œdematous. No ulceration or thickening of the vocal cords. (*Presented by* Dr. Cayley, Mayo Hospital, Calcutta.)

44. A preparation showing perforation of the trachea, and the migration of lumbricoid worms (*A. Lumbricoides*) from the œsophagus into the bronchi and left lung. A large, irregular-outlined opening, with ragged margins, is observed in the œsophagus just above the tracheal bifurcation, through which four lumbrici have passed, and may be seen here, coiled upon each other and extending into the bronchi. A second small perforation of the œsophagus has taken place about two inches higher, and through it a solitary worm has made its way into the apex of the left lung, which appears to have been firmly united by old pleuritic adhesions to the sides of the trachea and œsophagus in this situation. No history. (*Presented by* Professor Allan Webb.)

45. "The lungs and air-passages of a Hindu subject from the dissecting room. A globular cyst is seen connected to the exterior, but not communicating with the interior of the right bronchus near its origin, or at the bifurcation of the trachea. The wall of the tumour is thin and translucent. Its contents are semi-solid, filling the cavity of the cyst, which is as large as a small (hen's) egg." (Ewart.)

The pulmonary tissue behind the right bronchus is hollowed out for the reception of this cyst. The right bronchus is much narrowed

and compressed, the left proportionately dilated. The cyst contents are creamy and sebaceous-like,—represent most probably the remains of an old and degenerate hydatid cyst. (*Presented by Mr. Vanderstratten.*)

46. Cylindriform dilatation of the bronchial tubes, from a case of chronic phthisis,—a European soldier (Private J. Robinson, Her Majesty's 94th Regiment). The tubes present uniform dilatation of their canals and thickening of their walls. The mucous lining is rough, thrown into ridges and folds. The pulmonary tissue is much condensed from chronic inflammatory changes; is filled with small caseous nodules, and exhibits numerous small, irregular-outlined excavations, into some of which the dilated tubules may be traced. The interlobular connective tissue is everywhere much hypertrophied, forming dense, firm, opaque-white or greyish fibrous bands. The pleura is also throughout thickened. (Webb's *Pathologia Indica*, No. 1348, page 132.) (*Presented by Dr. Mouat, Inspector-General of Madras.*)
47. A portion of the left lung showing dilatation (cylindriform) of the bronchial tubes, thickening of their walls, and roughening of the lining membrane. These changes are associated with chronic phthisis of the lungs, *i.e.* consolidation, caseous and "pneumonic," numerous small excavations, and hypertrophy with much pigmentation of the interlobular connective tissue. (Webb's *Pathologia Indica*, No. 744, page 134.)
48. A portion of the left lung showing dilatation of the bronchial tubes, chiefly in the form of bulbous terminal expansions. Taken from a native woman, aged 50, who had suffered for several years from persistent bronchial catarrh.
49. Enlargement with caseation and pigmentation of the bronchial glands. One gland, situated just below the bifurcation of the trachea, is as large as a pigeon's egg. The mesenteric glands were similarly affected.—"From a young Hindu woman." (Webb's *Pathologia Indica*, No. 1410, page 140.)
50. Enormous enlargement and caseation of the bronchial glands surrounding the roots of the lungs, and occupying the anterior mediastinum. The majority are firm, of a yellowish-white colour, and cut like cheese. They are also marbled irregularly by dark pigment matter. Some of the glands, however, have undergone softening, and in two instances this seems to have led to ulceration and perforation of the trachea (at the point of bifurcation), and of the right bronchus (about half an inch from its origin). The former opening is rounded; the latter, irregular in outline; their margins are soft and shreddy; and through each is seen projecting a little fungous mass—the softened cheesy material of the glands. There is no history of the case on record. (*Presented by Professor Edward Goodeve.*)
51. Caseous degeneration of the bronchial glands, combined with much granular pigmentary infiltration. The lungs are said to have contained "an excessive deposit of pigmentary substance."

52. Greatly enlarged and very darkly pigmented bronchial glands, found, on *post-mortem* examination, surrounding the roots of the lungs in a case of catarrhal phthisis. The patient was a native male, aged 60, who died in hospital.
53. Enlarged, pigmented, and incipiently cheesy bronchial glands.—From a native male, aged 25, who died from fibroid phthisis. (“*Medical Post-mortem Records*,” vol. III, 1880, pp. 635-36.)
54. Several enlarged bronchial and tracheal lymph-glands, showing more or less diffused dark pigmentation.—From a native male, aged 20, who died from non-tubercular phthisis (chronic catarrhal pneumonia), with extensive consolidation and pigmentation of both lungs. (“*Medical Post-mortem Records*,” vol. III, 1880, pp. 667-68.)
55. Portions of lung substance and sections from several bronchial glands infiltrated with dark (melanotic) cancerous deposits.—From an East Indian (male), aged 44, in whom the disease was diffusely distributed—affecting the liver, brain, kidneys, bones, &c. (See further, “*Medical Post-mortem Records*,” vol. I, 1873, p. 16.)
56. A section from a hepatized lung in pneumonia. “Disease in first stage.” The lung tissue is of greyish colour, probably from age, the colouring matter having been washed out. Many of the alveoli are seen empty, the effect also of prolonged maceration; but, in others, a pale-yellowish, fibrinous material fills these spaces, and is also blocking several of the smaller bronchules. (*Presented by* Professor Allan Webb.)
57. The right lung of a native male patient, aged 25, who died in hospital from pneumonia. The whole lung is consolidated, pale-red in colour, finely granular on section, soft and friable, and exudes on pressure thick, muco-purulent, viscid fluid (“red hepatization”). The lung weighs 42 ounces.
58. Grey hepatization of the bases of both lungs, portions of which, together with the heart and aorta, have been preserved. The pulmonary tissue is semi-solid, and at the same time in parts tattered and disorganised, of greyish-white colour, and considerably pigmented. The heart is covered with recent lymph from acute pericarditis. Its cavities (especially the right ventricle) are occupied by large, firm, decolourised, fibrinous coagula, so common in pneumonia.
59. Sections from the lung, illustrating the physical appearances and general morbid anatomy of lobar pneumonia in the stage of “grey hepatization.”
60. “The thorax of a native child, showing complete pneumonia” (lobular) “of the right lung, with thickening and effusion of a large quantity of lymph over the right pleura.” (Colles.)
61. A preparation illustrating the characters of acute (lobular) pneumonia. Taken from a native female child, aged about twelve years. The patches of pulmonary consolidation are most numerous in the right lung, towards the posterior margin and base of which several may be seen, varying in size from a hen’s egg to a nutmeg. They are all situated superficially, *i.e.*, just

beneath the pulmonary pleura; are distinctly circumscribed; of a dark purple colour (in the fresh state); soft, and exude on pressure a little thin sanguineous serum. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 789-90.)

62. A section from the lower lobe of the left lung of a native boy, aged 12 years, who died in hospital from pyæmia associated with gangrene of the right foot. The preparation exhibits a circumscribed patch of lobular pneumonia, about the size of half a walnut, of a pinkish-grey colour from incipient softening and suppuration. There are also several smaller, wedge-shaped, dark-red infarctions. All are situated at the periphery (posterior margin) of the lung, and just beneath the visceral pleura, which is brightly injected, and coated with a little recent filmy lymph. There were multiple abscesses in both kidneys. (*See further, "Medical Post-mortem Records,"* vol. III, 1880, pp. 623-24.)
63. Right lung showing the characters of chronic interstitial pneumonia. The whole lung is invested by a thick "false membrane," which united it firmly to the ribs, intercostal spaces, and diaphragm. There is considerable condensation of the upper half of the superior lobe, with much thickening of the inter-alveolar and interlobular connective or fibrous tissue, and pigmentation of the pulmonary substance. All these conditions are again well marked in the lower lobe, and associated with enlargement, dilatation, and thickening of the bronchial tubes. The terminal bronchioles have, on the contrary, thin transparent walls. The whole of this lobe is semi-solid, firm, and of a greyish-red colour.—From an East Indian male, aged 25, who died in hospital. (*"Medical Post-mortem Records,"* vol. II, 1877, pp. 647-48.)
64. Chronic pneumonia of the left lung. The whole organ is unusually firm and solid. The bronchial tubes are thickened and dilated, especially in the superior lobe, and associated with much general fibroid thickening, condensation, and pigmentation of the interstitial connective tissue of the lung. There are also numerous small scattered cheesy deposits,—several in a state of softening, a few partially excavated.—From a native male, aged 30.
65. Interstitial pneumonia. A portion of the left lung of a native male patient, aged 40, who died in hospital. There is much condensation of the pulmonary tissue, produced partly by chronic pneumonic (caseous) changes, partly by increased thickening and development of the interlobular and inter-alveolar connective tissue. The latter forms broad, white, fibrous bands, intersecting the lung substance in various directions. At the upper part are three or four small circumscribed cavities (vomicæ). The pulmonary tissue generally is very darkly and abnormally pigmented.
66. Brown induration of the lung. A portion of the left lung (superior lobe chiefly) preserved. The pulmonary tissue is very much condensed, hard, and firm; throughout abundantly and very darkly pigmented. The bronchial tubes are dilated. The

interlobular and inter-alveolar connective tissue, and the visceral pleura, much thickened. There are a few scattered caseous and pigmentary concretions. Thick inspissated mucus occupied the terminal bronchules.—From an East Indian (male) patient, aged 45, who died from chronic bronchitis. The right cavities of the heart were greatly dilated and hypertrophied. The liver was “nutmeggy.”

67. Pneumonia, terminating in abscess. The preparation exhibits an abscess-cavity, capable of holding a duck's egg, situated at the posterior margin of the upper part of the inferior lobe of the left lung. It was filled with thin, highly offensive, reddish, purulent fluid, and its walls are composed of shreddy, disorganising tissue. Where it approached the surface the pleura was inflamed and thickened. The rest of this lobe is in a state of “red hepatization.”—From a Hindu, aged 25, who died in hospital. (“Medical *Post-mortem* Records,” vol. III, 1880, pp. 543-44.)
68. Both lungs showing small pyæmic abscesses situated at the surface, and invested by circumscribed patches of pleuritic exudation. The posterior surfaces of both organs are almost entirely covered with “yellow false membranes, which can easily be stripped off.” * * * * *
- “The liver showed a number of abscesses throughout its structure.”

Taken from a native male, aged 22, admitted into hospital with contused and lacerated wounds of three fingers of the right hand. “The middle finger was amputated through the metacarpal bone. A few days after, the wound became dry and ceased to granulate. The divided end of the metacarpal bone (around which an abscess holding about a drachm of pus had formed) protruded from the upper end of the wound, bare and dry. The patient had fever, with exacerbations at night, gradually increasing in intensity; rigors also, on three successive days, followed by jaundice and extensive pleuro-pneumonia. He sank 12 days after the operation.” (Colles.) (*Presented by* Professor J. A. Purefoy Colles, M.D., &c.)

69. Multiple small pyæmic abscesses of the left lung, from a Hindu boy, aged about 15, who died from erysipelas of the face, with intercurrent blood-poisoning. This lung exhibits, at its surface, numerous dark-purple ecchymoses and small circumscribed abscesses. The majority of the latter are the size of a pea or a little larger, and are all placed quite superficially. The deeper portions of the lung substance are pale, anæmic, and somewhat deficient in crepitation.

The lower lobe is covered at its base and outer margin by a thick “false-membrane.” The immediate base, for about half an inch, is consolidated and soft (pneumonia). The upper half of this lobe is especially infiltrated with multiple small abscesses. (*Presented by* Professor H. C. Cutcliffe, F.R.C.S., &c.)

70. The bases of both lungs infiltrated with small circumscribed pyæmic abscesses and softening infarctions.—From a native

male, aged 30, who died from pyæmia after compound comminuted fracture of the left foot, with subsequent suppuration of the soft parts, &c. (*See further, "Surgical Post-mortem Records,"* vol. I, 1880, pp. 673-74.)

71. "Gangrene of the whole of the lower lobe of the left lung, which is seen to be undergoing separation as a slough. The line of demarcation is conspicuously displayed. The right lung is greatly congested, particularly in its superficial portions of the parenchyma. The left lung is enveloped by pleura thickened by inflammatory exudation. The heart is fatty." (Ewart.) (*Presented by Mr. Minas.*)
72. Gangrene of a large portion of the superior lobe of the right lung, producing great disorganisation and excavation of the pulmonary tissue of this part.—From Martin Bryan, European patient, who died in hospital. (*Presented by Professor Chuekerbutty.*)
73. Gangrene of the lung. The superior lobe of the right lung is exhibited, with a patch of gangrenous softening at the upper part of its posterior margin. The pulmonary tissue is broken down, pulpified, shreddy (was highly foetid and offensive), for a space about the size of a hen's egg. This part is surrounded by consolidated, pus-infiltrated lung-substance, and had, in the recent state, a dark-greenish colour. Three similar but smaller patches of gangrene were found in the lower lobe, and a larger one at the base of the left lung.—From a greatly emaciated native (male), aged 35, who died from chronic dysentery and starvation. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 537-38).
74. Gangrene of the lung. The right lung is preserved. The whole of the middle lobe is gangrenous; is soft, shreddy, completely disorganised; of dark-greyish colour, and very putrescent (in the fresh state).—From a Hindu (male), aged 40, who died in hospital. (*"Medical Post-mortem Records,"* vol. II, 1878, pp. 945-46.)
75. A preparation showing gangrene of the upper half of the superior lobe of the right lung. The entire thickness of the pulmonary tissue at this part presents a dark ash-grey colour; is exceedingly soft and shreddy; and exhaled a peculiar putrid odour. Large portions have partially separated in the form of sloughs.—From a Frenchman, by occupation a hair-dresser, aged 34, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 123-24.)
76. Acute miliary tuberculosis of the lung. A portion (chiefly the superior lobe) of the left lung is exhibited. The pulmonary tissue is thickly infiltrated with minute rounded hard granules, like small sago-grains. They are also seen beneath the visceral pleura, where the latter is not thickened and opaque. The granulations are so diffusely and abundantly distributed that the lung tissue is rendered abnormally dense and solid,—the air-cells and blood-vessels compressed, and, in parts, obliterated. The great majority of the granules are in a state of incipient caseation.

- The opposite (right) lung was similarly affected, and also the right kidney. (*Presented by* Professor Edward Goodeve.)
77. "Both lungs of a native child, two years old, thickly studded with small masses of tubercle, each about the size of a pin's head. The deposit has the microscopic characters of tubercle. A portion of the ileum showed tubercular ulceration. Neither the child nor its mother (a prisoner) exhibited any indications of syphilitic taint." (Colles.) (*Presented by* Dr. Faweus, Alipore Jail.)
78. A beautiful specimen of acute miliary tuberculization of the lung. The organ is enlarged and heavy. Beneath the pulmonary pleura myriads of minute rounded, sago-grain-like granulations are seen, and yet more distinctly in the sections which have been made through the pulmonary tissue. A very large number of these granules are solitary, *i.e.*, disposed singly, but there are also groups of three, four, or more. No excavations and no caseous deposits are observed. The disease has been a rapid and acute one. (*Presented by* Professor Chuekerbutty.)
79. A portion of the right lung, showing diffuse miliary tuberculosis, much of it in a state of incipient cheesy metamorphosis. No history.
80. Both lungs diffusely infiltrated with miliary tubercles, the right also having a cavity at its apex, about the size of a walnut. The tubercles are for the most part in a state of incipient caseation.—From a native male, aged 16.
81. The right lung diffusely and very thickly infiltrated with miliary tubercles; some incipiently caseous, but the majority recent, pale-grey, hard, and resistant.—From a native female, aged 18, who died from general tuberculosis.
82. The upper half of the superior lobe of the left lung filled with large grey granulations and a few cheesy deposits. The inter-alveolar and interlobular connective tissue is irregularly thickened.

Both lungs were similarly affected. Sections made for microscopical examination show well-marked broncho-pneumonic lesions, intermingled with true tubercle, and fibroid thickening of the inter-alveolar tissue. The minute bronchi are seen to have thickened walls, and much increase of the peribronchial tissue. In connection with these are granules of a soft, greyish-yellow character, which are composed of two or more adjacent alveoli filled with proliferated fatty epithelium. Similar but larger caseous deposits (varying in size from a millet-seed to a small pea) are also identified. Surrounding such broncho-pneumonic and peribronchial granulations, and also upon the walls of the thickened bronchules, is a small-celled adenoid or lymphoid growth, forming minute excrescences,—true miliary tubercle. Much of this tubercle also shows degenerative changes—particularly fibroid metamorphosis. The inter-alveolar connective tissue is hyperplastic and deeply pigmented.

From a European (male) patient, aged 22, a leper, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 765-66.)

83. The apex of the lung of a patient "who died from abscess of the liver," exhibiting an irregularly rounded calcareous concretion, the size of a hazelnut, and a few smaller ones around it.

The mass is situated quite superficially. The superjacent pleura is thickened, depressed or puckered, and cicatricial-looking, and the surrounding lung tissue condensed and fibroid in appearance. The preparation illustrates that condition which, by the older pathologists, was termed "obsolescence of tubercle." (*Presented by Dr. Beatson of the General Hospital.*)

84. The apex of the right lung showing puckering of the pleura, condensation and fibroid thickening of the pulmonary tissue, and the presence of several small cretaceous nodules, surrounded by a limited deposit of miliary granulations (tubercle).—From a European male patient, aged 31, who died from chronic dysentery. ("Medical *Post-mortem* Records," vol. II, 1878, pp. 663-64.)
85. Sections from the apices of both lungs of a native male patient, aged 24. At the right apex is a small patch of miliary tubercle undergoing caseation and softening. At the left apex a circumscribed patch of the same kind, but in a state of hardening or induration from fibroid thickening of its own structure, and of the surrounding pulmonary tissue—the so-called "obsolescence of tubercle." ("Medical *Post-mortem* Records," vol. III, 1879, p. 12.)
86. Apex of the right lung preserved to illustrate the so-called "obsolescence of tubercle." It exhibits a thickened and puckered condition of the pleura, one large and several smaller cheesy nodules beneath it, and condensation, fibroid thickening, and pigmentation of the surrounding pulmonary tissue.
87. A section from the apex of the right lung of a native male, aged 31, who died from remittent fever and dysentery. There is a puckered, cicatricial condition of the pulmonary pleura, and, immediately beneath it, a small contracting vomica, about the size of a hazelnut, having a well-defined lining membrane. It contained a few drops of thick, puriform fluid, and is surrounded by condensed, fibroid, and pigmented lung-tissue. The preparation illustrates one method by which small vomicæ become obliterated.
88. The right lung showing most intense tuberculosis. Small, hard, grey, and larger, softer, more opaque granulations are seen thickly infiltrating the superior and middle lobes and the posterior margin of the lower lobe. The lung tissue is firm, dense, and much consolidated, except at the immediate apex, where a cavity the size of a hen's egg exists, traversed by obsolete bands of fibro-vascular tissue, and surrounded by a dense miliary growth. Although much of the tubercle is incipiently caseous, yet no large cheesy nodules are to be found in any portion of the lung; and the lower half of the inferior lobe is quite spongy and crepitant. The condition of the opposite lung has not been recorded, but the anatomical characters of the right lung seem to warrant the conclusion that the disease was essentially tubercular, and probably very rapid in its course,—an example, in fact, of florid tubercular phthisis ("galloping consumption").

89. A portion of the right lung of a native child, showing diffuse granular tuberculosis, with much thickening of the visceral pleura and firm adhesion to the diaphragm. The most remarkable lesion, however, is a cavity, the size of a pigeon's egg, at the lower extremity of the anterior margin. It has a well-defined outline, and is said to have "projected beyond the level of the organ, at which point thick layers of adhesive matter have been thrown out to prevent its effusion into the chest." It contains soft caseous material and shreds of disorganised lung-tissue. The inner surface is smooth and lined by a "pyogenic membrane" of considerable thickness. The bronchial glands show evidences of caseation and pulpy softening. ("Webb's *Pathologia Indica*," No. 261, p. 138.)

90. "A section from the lower lobe of the right lung of an adult Mahomedan who died in hospital. It is studded with clusters of miliary tubercles" and small rounded excavations (vomicae). "The pleura covering it is much thickened by false membrane. The apices of the lungs were riddled with large cavities. The spleen was soft, diffuent, and also infiltrated with tubercle." (Ewart.) (*Presented by* Professor C. R. Francis.)

91. "Sections of the lungs of a young English lad who died at the age of 18 from acute phthisis. Latterly he had hectic every night. His extremities became œdematous. He expectorated large quantities of muco-purulent fluid. Both at the right and left upper lobes there were cavernous breathing, gurgling, and, lower down, tubular breathing. Dulness on percussion; no material flattening.

The apices of both lungs are crammed with cheesy tubercular matter, and in varying degrees moderately riddled with small cavities. Besides, throughout the substance of the lower lobes, there is much consolidation from tubercular growth, both of the cheesy and miliary form. The preparation is put up to illustrate phthisis in a European, purely contracted in Bengal. A few months ago the boy was quite well. He caught, as it appeared to his parents, a common cold. This never left him. It settled on his lungs, and the specimens are the memorials of the whole thing from beginning to end—of, in fact, a case of what in England would be regarded as ordinary phthisis, running a rapid course. (Ewart.)

There is extensive pneumonic consolidation of both organs, associated with diffuse miliary tuberculosis. No caseation nor cavities can now be distinguished, except some breaking down of the consolidated lung-tissue at the apices. (J. F. P. McC.)

92. A portion of the left lung showing a tubercular cavity, the size of a small orange, at the apex, from which fatal hæmorrhage (hæmoptysis) occurred. A fine green glass rod has been passed into one of the pulmonary vessels which was found ruptured or ulcerated upon the inner surface of the vomica. The lung tissue for from one-fourth to half an inch around the excavation is consolidated; partly from pneumonic, partly from tubercular changes (*i.e.*, infiltration with caseating granulations).

There is free communication between the cavity and one of the larger branches of a primary bronchial tube.

93. The right lung from a case of pulmonary phthisis, showing a cavity, about the size of a walnut, at the junction of the superior with the inferior lobes of the organ on its right lateral aspect. This vomica is occupied by a yellowish-white fibrinous clot, the size of a pigeon's egg. There are several smaller cavities in this lung, with numerous cheesy nodules, and some patches of recent pulmonary apoplexy. From a native male, aged 40. During life the patient had several attacks of hæmoptysis, each very profuse or copious. Over the right apex there was cavernous breathing and gurgling.

The cavity above described is lined by a thin "pyogenic membrane;" and when the fibrinous coagulum is removed, the indurated and obstructed remains of several large blood-vessels can be traced, ramifying in various directions across its inner surface.

Portions of such, examined microscopically, show condensation and obliteration of their channels, and plugging with recently effused blood (minute thrombi). Two or three large-sized bronchules can be traced up to the cavity, but not actually into it, their terminations appearing compressed and filled with coagulum. Moreover, fragments of soft disintegrating blood-clot can be distinctly traced backwards into the right bronchus. The cavity is surrounded by a rampart of consolidated pneumonic lung, about a third of an inch in thickness. Several large branches of the right pulmonary artery can also be traced into close connection with the cavity, but again, owing to the surrounding consolidation, not directly into its interior. There seems no doubt, however, that the hæmorrhage proceeded from one or more considerable sized vessels. No aneurismal condition of the pulmonary vessels in or near this vomica could be detected.

The rest of the lung exhibits numerous cheesy nodules, small cavities with dilated bronchi—at the apex in particular; and an abundant infiltration of miliary tubercle. These changes were less marked in the opposite (left) lung. The fibrinous clot is a recent one, the result of the last fatal hæmorrhage which took place about four days before the death of the patient, and from which he never rallied. In the fresh state the clot was found soft and pulpy at the centre, dark coagulum and fluid blood being found here, while the periphery alone presented a firmer, decolorised condition.

94. Both lungs exhibiting several circumscribed excavations (vomicae), with diffuse miliary or granular infiltration of the pulmonary tissue—lesions characteristic of true tubercular phthisis.—From a native male, aged about 40, who died in hospital. (See further, "Medical Post-mortem Records," vol. II, 1877, pp. 471-72.)

95. Right lung showing very characteristically the morbid anatomy of acute tubercular phthisis. The lung is large and heavy; its superior lobe riddled with cavities, varying in size from a pea to a nutmeg, and containing thick, yellowish, muco-purulent secretion. They are surrounded by pulmonary tissue, solidified either from recent pneumonia or from cheesy changes. Irregularly but thickly distributed around and between these excavations are patches of miliary tubercle, some semi-transparent, hard,

and recent, the majority yellowish from commencing caseation. The whole of the middle and lower lobes is free from cavities, but very dark and congested (in the fresh state), and thickly infiltrated with isolated miliary granules, or small patches of the same, and, for the most part, apparently, of very recent development.—From a native woman, aged about 36, brought to the hospital in a moribund condition, and who died within twelve hours of admission. (“*Medical Post-mortem Records*,” vol. III, 1880, pp. 617-18.)

96. Base of the left lung showing great consolidation or condensation of structure from infiltration with the caseous products of catarrhal pneumonia; in parts also excavated. The caseous masses form nodules varying in size from a pea to a large pin's head, and are soft, friable, and yellowish. The largest excavation is at the immediate base; it is the size of a hen's egg, is partially lined by an opaque membrane, and into it are seen opening several bronchial tubes. Another excavation, the size of half a walnut, also lined by a very complete membrane, is seen higher up. The interlobular connective tissue is throughout more or less hypertrophied, and the pulmonary pleura shows much inflammatory thickening. There is no evidence of any true tubercle (grey granulations). (Webb's *Pathologia Indica*, No. 544, p. 137.)
97. Right lung exhibiting two large and several smaller excavations in the upper lobe. One, at the immediate apex, is the size of a pigeon's egg, and lined by a distinct “false membrane.” The tissue around it is consolidated and infiltrated with small miliary granules. A little below this is a larger vomica into which a medium-sized bronchial tube is seen to enter. Small cheesy deposits and tubercular granulations were found scattered irregularly throughout the middle and lower lobes. The left lung was quite free from disease. In the recent state the bronchi were filled with coagula. The patient, a “Mahomedan, aged 40,” died from hæmoptysis. (Webb's *Pathologia Indica*, No. 996, p. 135.)
98. Left lung, from a native, showing most extensive disorganisation of structure. The pleura is greatly thickened, and firmly invests the whole organ. At the apex is a vomica the size of a small orange, with several smaller loculi communicating directly or indirectly with it. The anterior and superior boundaries of this large cavity are formed by thickened pleura only. Its walls have a ragged appearance. Below this, the rest of the superior lobe is riddled with smaller excavations, and presents also much chronic pneumonic consolidation and caseation of structure. The lower lobe is similarly affected, but exhibits very few softenings or cavities. (Webb's *Pathologia Indica*, No. 1404, p. 139.)
99. A beautiful specimen of cheesy bronchitis or pneumonia. The section of lung substance preserved shows extensive consolidation of the pulmonary tissue by caseous infiltration. The smaller bronchules and air-cells or alveoli are all filled with soft

opaque-white material. The bronchi are dilated, their walls thickened, and exhibit lateral and terminal rounded (bulbous) expansions,—these varying in size from a pea to a pigeon's egg. Even the larger ones are clearly demonstrated to be directly continuous with the expanded bronchi, for they are lined by a common membrane. Where the soft caseous matter has dissolved out, the lung-tissue presents a very strikingly reticulated or honey-combed appearance. One large excavation, situated at the lower end of the section, contained the ovoid calcareous concretion now moored to the same by a thread. The pleura is thick, opaque, and ragged-looking. The interlobular tissue incipiently hypertrophied and pigmented. (Webb's *Pathologia Indica*, No. 376, p. 134.)

100. A preparation exhibiting very characteristically the morbid anatomy of chronic catarrhal or caseous phthisis. Almost the whole of the pulmonary tissue is consolidated and of a greyish-white colour. The bronchi show inspissation and caseation of their contents,—those towards the periphery being completely blocked by the same. The pulmonary alveoli and infundibula are similarly altered,—their proliferated epithelial contents converted into soft cheesy material. Accompanying or associated with these changes are small excavations at the apex, and throughout the superior lobe. These communicate directly with thickened and dilated bronchial tubes, and are evidently constituted by circumscribed but irregular expansions of the same. They are all lined by a distinct, soft, opaque-white membrane, continuous with that of the bronchi. Groups of bronchopneumonic granulations surround the peripheral tubules. The interstitial or interlobular tissue is thickened and fibrous-looking. Small portions of apparently healthy pulmonary tissue remain in the lower lobe. Much dark pigmentation of the lung is throughout evident. (*Presented by Dr. Clark.*)

101. A large anfanguous cavity (vomica) occupying the upper half of the superior lobe of the left lung, the rest of which is in a state of pneumonic consolidation. The specimen is a good illustration of the multiseptate character of many phthisical cavities.

102. A section from the lower lobe of the left lung, preserved to illustrate the commencing excavation of lung-tissue which follows upon the caseation of the products of catarrhal pneumonia. By an extension of the process here exemplified, the larger caverns or vomicae of pulmonary phthisis are often constituted, *i.e.*, by the coalescence of minute excavations to form larger ones.

Under the microscope the air-cells are found broken down; two, three, or more uniting to form a little cavity, filled with soft cheesy material, and consisting of shreddy, disintegrating epithelium, with granular and molecular fat. (Much of this material has dropped out in the preparation of the specimen.) The alveolar dissepiments are found atrophied, and the alveolar wall and inter-alveolar connective tissue infiltrated with granular fatty cells, the size of pus corpuscles, and much pigment.

From a native male patient who died from chronic catarrhal pneumonia.

- 103.** The whole of the left lung showing much enlargement and consolidation, the result of broncho-pneumonic changes. Large numbers of pigmented granules, the size of swan-shot, infiltrate the pulmonary tissue. The bronchial tubes and their branches are throughout dilated, and exhibit abnormal vascularity and thickening of their lining membrane. No excavations or vomicae were found in either lung, and no true miliary tubercle. All organs of the body were free from the latter.

The microscopical examination of sections taken from this lung revealed very characteristically the morbid anatomy of broncho-pneumonia with peri-bronchitis. The granules above referred to are hard, opaque, and pigmented; many of them show on careful examination a very minute opening or aperture at the centre, evidently the cross-section of a terminal bronchule; and, after brushing out the sections, it is seen that the pulmonary alveoli immediately surrounding such terminal bronchules are filled with inflammatory products, *i.e.*, proliferated epithelium, granule cells and masses, free granular fat, withered blood cells, pigment, &c. The bronchule-walls are thickened, the interior (channel) occupied by fatty epithelial debris. There is very little *inter-alveolar* growth; the changes are almost entirely *intra-alveolar*. In parts, however, some inter-alveolar proliferation can be recognised, and consists of small round lymphoid cells, indistinguishable from the adenoid structure of true tubercle. Yet the main or principal disease is broncho-pneumonic, not tubercular.

- 104.** Both lungs exhibiting well-marked characters of chronic catarrhal pneumonia (non-tubercular phthisis). The superior and middle lobes of the right lung and the whole of the left are filled with large cheesy masses and cavities of various sizes. The interlobular connective tissue is greatly thickened. The bronchial tubes are throughout dilated; their walls thickened; their lining membrane soft, swollen, and of dark-purple colour (in the fresh state). They, as well as the lung excavations, were occupied by thick muco-pus. The latter (cavities) are largest in the left lung. At the apex there is one, the size of an orange, irregular in outline, and its roof formed by thickened pleura only. About an inch below this is another vomica, the size of a hen's egg; and in the lower lobe a third, as large as a walnut. All these communicate freely with large-sized bronchules, and are lined by a kind of "pyogenic" membrane. Smaller cavities of the same character are found in both organs. In neither can any miliary tubercle be discovered (except microscopically).—From a native male, aged 35. ("Medical *Post-mortem* Records," vol. II, 1877, pp. 347-48.)

- 105.** Right lung showing very typically the morbid anatomy of catarrhal (non-tubercular) phthisis. This lung has two lobes only. Both these are seen to be riddled with various sized, irregular-outlined excavations. They communicate freely with larger and smaller bronchules, and contained thick muco-purulent fluid. All are lined by a distinct opaque-white membrane, and around each, for a variable distance (two or three lines to half an inch), the pulmonary tissue is consolidated, pneumonic, reddish-brown in colour, with here and there interspersed cheesy nodules, and broncho-pneumonic granulations. No true grey tubercle.—From a native male, aged 16, who died in hospital.

106. Non-tubercular phthisis or chronic catarrhal pneumonia of the left lung. The pulmonary tissue is consolidated, partly from recent lobular pneumonia, partly from cheesy transformation of the same. It is also riddled with small cavities, irregular outlined, and with thin intervening septa of disorganising lung substance. These cavities vary in size from a hen's egg to a pea, and contain thick yellowish purulent secretion. There is hardly any healthy lung tissue remaining, yet no miliary granulations are visible to the naked eye. ("Medical *Post-mortem* Records," vol. II, 1877, pp. 483-84.)
107. A longitudinal section from the central portion of the right lung, illustrating very beautifully the characters of chronic caseous pneumonia (non-tubercular phthisis). The lung substance is seen to be much consolidated and riddled with cavities, varying in size from a walnut to a pea. They contain thick reddish-yellow mucopurulent fluid. There are also numerous cheesy deposits. The bronchial tubes are throughout dilated, and communicate both with the cavities and caseous nodules. The inter-lobular connective tissue in parts of the section is seen to be hypertrophied. The whole of the right lung was affected; the left only partially. The former weighed 50 ounces.—From a native male (Hindu), aged 44. ("Medical *Post-mortem* Records," vol. III, 1880, pp. 447-48.)
108. The left lung of a native male patient, aged 25, who died from chronic catarrhal or non-tubercular phthisis. The upper half of the superior lobe is riddled with small cavities, varying in size from a pea to a sparrow's egg, and communicating (generally) with small-sized bronchules. They are surrounded by pulmonary tissue solidified from recent and progressive pneumonic changes, or by small cheesy infarctions or broncho-pneumonic granulations. The rest of the superior and the whole of the lower lobe have a coarsely-granular appearance at the surface and on section. This is due to the presence of innumerable broncho-pneumonic granulations, some as large as a split-pea, the majority the size of millet-seed. No grey granulations (true tubercle) are to be detected. The right lung presented similar but more advanced changes, and was equally free from miliary tubercle. (See further, "Medical *Post-mortem* Records," vol. III, 1880, pp. 549-50.)
109. The lungs of a native female child, aged 12, who died in hospital. Both organs are larger and heavier than normal; their surfaces roughened, granular, dotted over with little opaque-white bodies. The latter are also seen diffusely and thickly infiltrating the deeper pulmonary parenchyma. They vary in size from a large pin's head to a sago or tapioca-grain, are distinctly cheesy, rounded, and circumscribed. A great many present, at the centre, a minute tubular or hollow space, evidently the cross-section of a divided bronchule. The granules are, in fact, peri-bronchial in character; a few broncho-pneumonic, none tubercular. The great majority are isolated or separate, quite sharply defined. They are so abundantly

distributed that scarcely any normal lung-tissue remains ; and that which does, was, in the fresh state, deeply congested and of dark-purple colour. The bronchial tubes were filled with thick, reddish, sticky secretion (mucus) ; their lining membrane soft and vascular. The bronchial glands were all enlarged and pigmented,—a few cheesy.

Microscopic examination confirms the naked eye appearances of the granules above described. The minute bronchioles are found filled with degenerate fatty epithelium or opaque cheesy material. Their walls much thickened and nucleated, the surrounding pulmonary alveoli in a state of catarrh—the walls thickened, the epithelium in a state of proliferation. No tubercular growth can be discovered.

(“ *Medical Post-mortem Records*,” vol. III, 1880, pp. 599-600.)

110. The upper and a portion of the middle lobe of the right lung. The former has been hollowed out into a cavity the size of a large orange, the walls of which are principally formed of very firm, thickened, and condensed pleura. The interior is irregularly multilocular, exhibits old fibroid strands of obsolete vessels, &c., and is seen to communicate freely with several large-sized bronchial tubes. The middle lobe has, on one side, a series of similar excavations, in size varying from a walnut to a hazel-nut ; on the other, the pulmonary tissue is condensed and firm, densely infiltrated with minute pale-grey granulations, and shows considerable thickening of the interlobular connective tissue (chronic fibroid phthisis). (*Presented by Dr. C. Palmer of Jessore.*)
111. Chronic (fibroid) phthisis. An example of chronic phthisical changes in the lungs. Both organs are about equally affected. The pleura is universally adherent and greatly thickened. The lung substance is seen to be throughout infiltrated with small caseous nodules (from a small pea to a hazel-nut in size), following closely the ramifications of the bronchi. The latter are everywhere large and dilated ; their walls thickened, and more or less opaque. The interlobular connective tissue is hypertrophied, forming broad, white, fibrous-looking bands, traversing the lung-tissue in all directions. At the apices and anterior margins small cavities are observed, not larger than half a walnut, with semi-solid cheesy contents. (*Presented by Professor Allan Webb.*)
112. Chronic fibroid phthisis. The whole of the superior lobe of the left lung has been converted into a cavity the size of the closed fist, the walls of which are lined by a distinct velvety, soft, opaque, pseudo-membrane, beneath which a thin shred of lung-tissue can be discerned, and this, in turn, is invested by greatly thickened pleura. The latter is, in parts, quite one-eighth of an inch in thickness. The lower lobe is firm, much contracted and condensed. At its upper part is hollowed out into a few small cavities, all lined by smooth false membrane. At its lower part it is carnified-looking, shows much increase of the interlobular tissue, the exaggerated, broad white bands of which are very distinct, and, towards the periphery, become continuous with the thickened tissue of the pleura. The whole lung

is greatly reduced in size. (*Presented by Professor Edward Goodeve.*)

113. The lower, and a portion of the middle lobe of the right lung illustrating the characters of fibroid phthisis. The pulmonary tissue is seen to be much condensed. It is traversed by broad opaque-white bands of fibrous tissue, the result of an hyperplasia of the inter-alveolar and interlobular connective tissue. These bands terminate at the periphery of the organ by becoming continuous with a highly thickened and leathery pleura, which invests and, as it were, compresses the lung substance. There is also a good deal of general dark pigmentation of the pulmonary tissue, and a section made through three enlarged bronchial glands at the root of this lung shows a similar coal-black condition of their structure. Both lobes are riddled with small, irregular-outlined cavities or vomicae, several of them communicating directly with bronchules of the third or fourth series (as regards size). Almost the whole of the superior lobe was involved in a large anfarctuous cavity, with thick, fibroid walls. Lastly, there is a diffuse and abundant distribution of miliary tubercle, chiefly in an incipiently caseous condition, but also, fresh grey hard granules. The left lung exhibited similar morbid changes, but not to so advanced a degree. The subject was a European seaman (a Swede), aged 26. (*See further, "Medical Post-mortem Records," vol. I, 1874, pp. 323-24.*)

114. The upper half of the left lung, with its corresponding bronchus and branches. The lung-tissue is seen diffusely infiltrated with miliary granulations, mostly in small circumscribed patches. With this also are small depôts of softening and cheesy infarction, and a few small circumscribed cavities. The largest cavity is situated about an inch below the apex, and is the size of a walnut. The apex itself is almost solid, shows three or four small pea-like excavations surrounded by thickened, condensed, and fibroid-looking tissue, in which only a few granulations are to be seen. The same kind of fibroid thickening of the inter-alveolar and interlobular connective tissue of the lung is a marked feature in the morbid anatomy of the rest of this portion of the lung, so that, in spite of considerable softening and destruction of the proper structure, the lung-substance is remarkably firm and rigid. Many also of the solitary granules and small miliary patches have this same peculiarity, *i.e.*, an abnormal degree of resistance and dryness. The preparation illustrates a variety of fibroid phthisis, which may probably be regarded as *syphilitic*, since the patient, a West Indian, had a marked syphilitic history, and presented nodes on his tibiae, &c. (*Presented by Dr. A. Vans Best, Presidency General Hospital.*)

115. Sections from the left lung showing cheesy consolidation, with broncho-pneumonic changes and fibroid thickening of the interlobular connective tissue,—all probably syphilitic. The cheesy infarctions are all of small size—none much larger than a pea—and are particularly dense and firm.

Microscopic sections show (1) a small nuclear growth (syphilitic), especially abundant around the bronchi, both large and small. This peri-bronchial growth passes outwards into the alveolar walls, thickening them, and leading to (2) collapse, distortion, irregular dilatation (in some parts), or complete obliteration of the air-cells; (3) the contents of such as remain consist of degenerate epithelium and fatty granular matter, just as is met with in lobular pneumonia; (4) in certain situations the small-celled peri-bronchial growth exhibits a tendency to nodulation, the central portions of such nodules being invariably more opaque than the peripheral; (5) the smaller bronchi generally are found obstructed, or more or less filled with degenerate (fatty) epithelial products; (6) lastly, there is much dark amorphous pigmentation of the lung, and this, too, is especially marked in the neighbourhood of the bronchi, often obscuring, in this situation, the small-celled growth above described.

From a native male, aged 35, who had a hard chancre, followed by secondary symptoms, about six months prior to death, and in whom a cough with other evidences of pulmonary disease first manifested themselves during the appearance of a specific skin eruption. (*See further, "Medical Post-mortem Records," vol. III, 1879, pp. 325-26.*)

116. "Apoplexy of the lung, particularly well shown in the uppermost section, in which there is an extravasation as large as a walnut. It is now of a chocolate colour, contrasting plainly with the surrounding grey pulmonary structure. It is partially pitted in consequence of the coagulum having crumbled out of the cut cells during maceration." (Ewart.)

117. Both lungs of a native boy, aged 11, who died from cancrum oris and sub-acute dysentery. These organs exhibit very abundant superficial and interstitial purpuric blood extravasations or ecchymoses, and illustrate a common morbid change observed in cases of spanæmia, the blood readily separating from the weakened blood-vessels, assisted by a feeble and slow circulation.

118. A preparation showing the right lung, over the surface of which are scattered numerous dark-brown patches varying in size from a pea to a walnut. The larger patches are situated chiefly at the base. They are all hæmorrhagic infarctions, are distinctly circumscribed, and surrounded by hyperæmic zones. On incision, each infarct presents a smooth surface of a dark-red colour; some firm and solid throughout, others in a state of incipient softening. From a native male patient who died in hospital from pyæmia.

119. The superior lobe of the right lung showing a cavity, the size of a walnut, which was found filled with semi-solid curdy material, consisting chiefly of altered blood. The patient, a West Indian (Negro), aged 40, had several attacks of profuse hæmoptysis shortly before death. Both lungs exhibited all the characters of catarrhal phthisis.

On microscopic examination of the walls of the little cavity, the vessels in and around it exhibit, in parts, some thickening, due to a small-celled perivascular nuclear growth (tubercle); in others, much thinning, atrophy, almost complete disappearance of the transverse markings (muscular coat), and fatty degeneration. No pouching or aneurismal dilatation of the walls of these vessels is observed.

120. "Œdema of the lung. In this preparation, from the lung of a Hindu, the cellular structure that unites the lobules is distended with water or serum; perfectly transparent, like white lines, dividing the lobuli. The air cells are also distended with fluid, leaving the minute vessels distinctly seen, ramifying upon their parieties. The lung sinks in the spirit, and is wholly unfit for respiration, every cell where air *should* enter being occupied by fluid." (Allan Webb's *Pathologia Indica*, No. 243, p. 138.)
121. Atelectasis pulmonum,—the imperfectly expanded lungs of a seven-months' child.
"The child was born before medical aid arrived, and was thought by the attendants to be dead. It was found cast aside and lying underneath the placenta. On removing this, the child was seen to attempt respiration. When placed in a current of air it began to breathe. It died from asthænia and apnœa seven or eight hours afterwards. The blood was remarkably dark, and it was reported to have brought up some by the mouth prior to death." (Ewart.)
122. Acquired atelectasis or collapse of the lung, with complementary emphysema of the adjacent pulmonary tissue. The specimen consists of a small portion of the left lung showing a circumscribed rounded patch, quite collapsed, firm, and destitute of air; succeeding this, and intervening between it and the healthy lung-tissue, is a large emphysematous bulla or bleb.
123. "Granular tubercular depositions upon the pleura, causing effusion (nine pints), compression of the lung, atrophy of the heart.—From a Hindu woman, aged about 45." (Allan Webb's *Pathologia Indica*, No. 1018, p. 137.)
No tubercular granulations can now be discovered affecting the pulmonary pleura, but the costal layer of this membrane is much thickened, and shows small hard granules, varying in size from a pin's head to a swan-shot, disseminated throughout the subserous connective tissue. Both costal and visceral layers of the pleura are thickened, softened, and covered with shreds and films of recent lymph. The whole of the lung (right) is greatly compressed, and completely carnified.
124. Carnification of the lung, from a case of empyema. The compressed and atrophied condition of the organ is well illustrated in the specimen, and also its almost solid appearance on section. A thick layer of partly organised lymph invests the entire surface of the visceral pleura.
125. Complete carnification of the left lung, the result of hydrothorax. The organ is seen to be much reduced in size. It is firm and semi-solid on section, almost absolutely destitute of air. All these changes are due to hydrostatic pressure upon the soft, yielding, and spongy pulmonary tissue.—From a native female who died in hospital.
126. "Portion of carnified lung with thickened pulmonary pleura over it." (Ewart.)
127. "Specimens of emphysematous lung from a Hindu. The various sections illustrate the uniform dilatation of the pulmonary

cells, particularly near the margin of the organ. Some of the emphysematous bladders are, however, as large as peas. The contrast between the lung altered by emphysema and the healthy parenchyma is admirably shown. In the former the parenchyma is pale and distinctly spongoid; in the latter it is greyish, intermingled with dark spots, and presenting an innumerable number of almost normal-sized pulmonary cells. Moreover, the bronchial tubes in the emphysematous portion are greatly dilated, remarkably so when compared with the tubes leading to the healthy pulmonary tissue." (Ewart.) (*Presented by Professor Allan Webb.*)

128. Extreme vesicular emphysema of the left lung of a native patient. The morbid condition is most marked at the apex and along the anterior margin. In the former situation the pulmonary tissue is raised into a series of bullæ, which vary in size from a pea to a walnut. At about the centre of the anterior margin is a very large multilocular bulla, with exceedingly thin, delicate, and transparent walls. At the inferior termination of this border is another similar development somewhat smaller in size. Small limited patches of apparently pneumonic consolidation are observed in the neighbourhood of the two latter. The lung-tissue is throughout very darkly pigmented, and the bronchial tubes are dilated.
129. Complementary or supplementary vesicular emphysema. The preparation exhibits a section from the inferior lobe of the right lung, including its anterior margin, with a large emphysematous bleb surrounded by a depressed dark ring of collapsed lung-substance. The rest of this lobe is in a state of "red hepatization."—From a European male, aged 32.
130. Emphysematous anterior margins of the lungs. The pulmonary tissue is seen raised into large semi-transparent bullæ and smaller pea-like vesicles along the whole length of these excised margins. It is also throughout very darkly pigmented.—From a native male, aged 60, who had long suffered from chronic bronchitis, and died from remittent fever.
131. The anterior margins of both lungs from a case of cholera—a native male, aged 30—showing extensive vesicular emphysema, associated, in parts also, with interstitial or interlobular emphysema. The emphysematous portions are distended so as to form distinct bladder-like prominences, which are arranged in a moniliform manner along the free edge or margin of each lung.
132. A portion of lung showing extensive dark pigmentation. No history.
133. Senile melanosis of the lungs. Both organs are seen to be uniformly and very darkly pigmented. The colouring is most intense at the surface, just beneath the visceral pleura.
From an East Indian (J. D'C.—), aged 49, who died from "fever with hæmatemesis."
134. Both lungs preserved to illustrate the excessively pigmented condition of these organs so commonly found associated with the chronic bronchitis and emphysema of old age. Taken from a

native female, aged 55, who died from acute dysentery. The pigment matter, which is of coal-black colour, is especially thickly distributed at the surface of the lungs, just beneath the pulmonary pleura; and, in the interior, occupies chiefly the inter-alveolar and interlobular connective tissue. It is amorphous and granular in character.

135. Both lungs of a native adult, very profusely infiltrated with nodules of medullary cancer. They are in great abundance, both in the parenchyma of the lungs and also on their surfaces,—in the latter situation just beneath the pulmonary pleura. They vary in size from a pigeon's egg to a pea. The majority are flattened and a little depressed on their free surfaces. They are soft and brain-like in appearance and consistency, and, under the microscope, present all the characters of rapidly proliferating medullary or encephaloid cancer, the cells and stroma being both well marked—the former polymorphous, nucleated, and exceedingly numerous; free nuclei and fat granules also abound. The growth affects both the pleura and pulmonary tissue proper.

136. Encephaloid carcinoma of the lungs. From a native male patient, aged 30, who died from hæmorrhage and exhaustion attending the growth of a medullary cancer, the size of a cocoanut, in the right iliac fossa. Both lungs are seen infiltrated with soft, pinkish-white nodules, varying in size from a split-pea to a hazelnut, distributed freely over the surfaces, and also in the deeper pulmonary parenchyma. The microscopic examination of these secondary growths, as well as of the primary or original tumour, showed cancerous (encephaloid) structure. (*Presented by Professor J. A. Purefoy Colles, M.D., &c.*)

137. Encephaloid carcinoma of the lungs. A secondary manifestation or deposit in a case of primary cancer of the testicle. A European male, aged 43. Both lungs are infiltrated, especially near their surfaces, with cancerous nodules varying in size from a duck's egg to a pea. They had, in the fresh state, a pale-pink colour and a brain-like appearance and consistency.

On microscopic examination the air cells are found blocked with fatty disintegrating epithelium, as in lobular pneumonia, and co-existing with this is a widening out of the inter-alveolar connective tissue into a soft cancerous stroma, sparingly filled (in brushed out sections) with large epithelial cells. The latter are larger by comparison, and better defined than the intra-alveolar epithelial products, and although the majority of the cell elements show fatty infiltration, they are not so much broken up or disintegrated as the proliferated elements of the air spaces.

(See further, "Surgical Post-mortem Records," vol. I, 1875, pp. 237-38.)

138. Both lungs extensively infiltrated with soft, cancerous, nodular growths. These are of all sizes; the largest about that of a hen's egg; the smallest of a pea. They are situated mostly at the surfaces of the lungs, are distinctly circumscribed, have raised rounded margins and slightly flattened surfaces; consistency and colour soft and brain-like. They are secondary developments in a case of primary encephaloid cancer of the femur. A native lad, aged 15, whose thigh was amputated at

the hip-joint. Similar growths were found in the anterior mediastinum also, and infiltrating the diaphragm, pleura, lumbar glands, &c. ("Surgical *Post-mortem* Records," vol. I, 1877, pp. 397-98.)

139. The anterior margin of the right lung occupied by a secondary sarcomatous growth, about the size of a hen's egg. It appeared to have developed by direct extension from a large fungating tumour of the right mamma,—a recurrent round-celled sarcoma. The morbid growth seems to involve chiefly the inter-alveolar tissue, the alveoli being blocked by fatty epithelium and granular matter. The structure is distinctly sarcomatous, consisting of round and oval cells, with large single or double nuclei imbedded in a kind of granular protoplasm, *i.e.*, possessing no formed intercellular substance or stroma. There was a similar nodular infiltration of the liver.—From a native female, aged 27.
140. Tuberculosis of the lungs, liver, and spleen of an Orang-utan (*Simia Satyrus*). "In the lungs the deposit is of a yellowish colour, contrasting remarkably in this respect with the dark-brown appearance of the pulmonary structure. The surface and section are consequently mottled. The scrofulous deposits vary from the size of a millet seed to that of a small pea. The spleen and liver also contain tubercular material having similar physical characteristics." (Ewart.)
141. "A very beautiful preparation showing the effects of acute inflammation of the pleura and pericardium. The left lung is united to the pericardium by layers of coagulable lymph of great thickness, shreds of which are seen covering the pulmonary pleura. On section the lung is observed to be fleshy in consistence—a condition produced by the compression to which it has been subjected by the effused fluid. This is particularly noticed at the base, where the whole structure presents a yellowish appearance, contrasting remarkably with the grey pulmonary tissue above it. The visceral pericardium is roughened by the deposition of recent lymph." (Ewart.) No history.
142. Acute fibrinous pleuritis. This preparation is particularly valuable as illustrative of an early stage in the so-called "organisation" of a "false membrane," the result of recent diffuse pleuritis, and which invests the whole of the lung (right). The permeation in every direction of this delicate structure by minute ramifying blood-vessels is especially well seen.—From a native male, aged 30.
143. "Abundant deposition of lymph upon the pulmonary pleura and diaphragm, forming a fringe as thick as the finger upon the free edge of the lung, and coating the surface in a less degree above, caused by an abscess seen near the apex, bursting into the chest." (Allan Webb's *Pathologia Indica*, No. 829, p. 137).

This is a very good illustration of one of the most frequent causes of diffuse pleuritis, *viz.*, the rupture of a pulmonary vomica.

The specimen exhibits a cavity, the size of a small orange, at the apex of the lung (left), which, at the situation indicated by a glass rod, has burst into the pleura and excited the very extensive inflammation and consequent thickening of this membrane, which the preparation displays. A section through the lung shows much fibroid thickening and pigmentation of the pulmonary tissue, several smaller excavations, a few cheesy nodules, and much condensation of the lower lobe from pressure (carnification).

144. "Thickened portions of pleura after pleuritis. There was considerable effusion and detached masses of lymph." (Colles.) This is a portion of the costal or parietal pleura. It is tough and leathery in consistency, and its inner surface presents a highly roughened and granular appearance from commencing organisation of the effused lymph.
145. A portion of the pulmonary pleura. From a Chinaman, aged 50, who died from chronic pleuritis and tuberculosis: The membrane is seen to be three to four lines in thickness, opaque, firm, and leathery in consistency. In the fresh state there was some interstitial mucoid infiltration of its structure.
146. Portions of greatly thickened pleura, from a case of chronic pleuritis with effusion. A native male, aged 26, who died in hospital.
147. Portions of a rib and of the left lung showing old inflammatory adhesions between the costal and pulmonic pleura, as also between the pulmonic and mediastinal, and pulmonic and diaphragmatic pleura, and some bands between the contiguous surfaces of the visceral pleura which invested the two lobes of this lung. (*Presented by* Assistant Surgeon Chunder Mohun Ghose.)
148. Pyo-thorax. A preparation showing the expansion of the parieties of the thorax and displacement of the heart consequent upon a purulent effusion into the left pleural cavity. The intercostal spaces are wide and expanded. The heart lies in front of and to the right of the spinal column (median line). Both surfaces of the pleura are thickly coated with opaque, partially organised lymph, shreds of which, attached by one end to the lung, float in the pleural cavity. The lung is greatly compressed and flattened, pushed backwards against the spine, and on section is seen to be completely carnified. (Webb's *Pathologia Indica*, No. 1622, p. 54.) (*Presented by* Professor Jackson.)
149. A preparation illustrating the morbid anatomy of empyema (left). "Probably a vomica had burst into the left pleural cavity. A collapsed cavity is seen at the top of the left lung, and a little lower down the sloughing margin of an opening communicating with another." The whole of the superior lobe is infiltrated with small caseous nodules and patches of softening. The lower lobe is compressed and carnified. The right lung shows thickening of the visceral pleura, and the presence of a pseudo-membrane over the greater part of both lobes. The anterior margins are emphysematous. (Webb's *Pathologia Indica*, No. 1617, p. 36.) (*Presented by* Dr. Bond, of Burdwan.)

150. A very fine preparation illustrating the pathological changes which characterise chronic empyema. The left lung is seen to be pressed backwards against the spine, and much condensed. Both parietal and visceral layers of the pleura are greatly thickened, the former especially so, being exceedingly tough, leathery, and fibrous over the ribs, and in parts quite rigid from calcareous deposit (infiltration). This condition is most marked along the spinal attachments of the lower ribs: a thick plate of thickened and calcified pleura is seen thus extending between the ninth and tenth ribs. Similar but less rigid and firm dissepiments will be observed passing between the thickened opposed layers of the pleura at the level of the third and fifth ribs, so that this cavity seems to have been subdivided into three separate and distinct loculi. (*Presented by Dr. Chuckerbutty.*)
151. "The left pleural sac with the corresponding lung. From a patient (M. Faucett), aged 29 years, who died of chronic empyema. The pleural sac was filled with 113 ounces of greenish-yellow fluid, with floating flakes of lymph. A thick organised false membrane bound down the left lung firmly to the spinal column." This lung is now seen, greatly reduced in size, compressed, and carnified.
152. Tubercular infiltration of the left lung, with an encysted empyema. From a native male, aged 41, who died of acute phthisis. The superior and inferior lobes are both freely infiltrated with hard, grey, miliary granulations. The pleura is throughout thickened, and unites the lung to the chest-wall and diaphragm. At the inner and back part of the pleural cavity, near the junction of the superior and inferior lobes, an encysted cavity between the two layers of thickened pleura may be observed. It contained about six ounces of opaque purulent fluid, with small masses of coagulated and partially organised lymph. No direct communication between the lung and this cavity could be discovered. (*See further, "Medical Post-mortem Records," vol. I, 1873, p. 94.*)
153. "Extraordinary lenticular vegetations projecting from the costal pleura like small buttons. Some of these are globular, others more or less elongated. They arise by a broad base, and they are covered by a smooth membrane continuous with the pleura, which is greatly thickened. These growths vary in size from a millet-seed (or small point) to that of a kidney-bean.—From a native of Bombay, who died from dysentery." (Ewart.)

Examined microscopically, these growths are found to consist of very dense and firm white fibrous tissue, a considerable amount of granular fat being also distributed along the course of the fibres, and aggregated into small spindle-shaped masses or deposits, apparently representing a similar condition (fatty infiltration) of the nuclei. They appear to have originated in the subserous cellular or connective tissue, and constitute, in fact, large permanent granulations of the same, completely organised into fibrous tissue. Small outgrowths of this kind are not uncommon in cases of chronic pleurisy, when the inflammatory process has spread to the deeper strata of the serous membrane. The preparation therefore probably exhibits merely

an exaggerated condition of this kind, and seems also comparable to the "melon-seed" or "filbert-shaped" growths so frequently formed in chronically inflamed synovial membranes, *e.g.*, in the knee-joint.—J.F. P. McC.

(Presented by Dr. Oxley, of Singapore.)

154. A section from the left lung, which, as well as the right, contained numbers of small calcareous concretions—apparently obsolete tubercle—in the upper lobes. No recent grey granulations were found. In the preparations two of these concretions are exposed. They occupy the pleura and immediately subjacent lung-tissue. Each is about the size of a pea. The patient, a native male, aged 30, died from albuminuria, with amyloid degeneration of the kidneys, spleen, and liver.

155. Pigmentary growths (melanomata) from the pleura of a horse. This membrane is greatly thickened, and bears on its surface groups or bunches of very jet-black, villous or papilliform growths. These are attached to the inner surface of the pleura, and in parts involve the sub-pleural tissue, but do not extend into the proper lung-substance. The majority form tufts composed of dark, rounded or nodular bodies, supporting secondary and tertiary developments of similar structure. A few are solitary, pendulous or polypoid. On section, the smaller growths have a uniform, homogeneous, smooth, intense black colour; but, in the larger ones, fine whitish fibrous-looking streaks are present, giving a variegated appearance to the cut surface.

Microscopically the structure of these growths is almost entirely pigmentary, the pigment being deposited in a granular form, aggregated into smaller and larger points. Between these, a few brown-stained small round cells are observed, intermingled with a delicate fibrillary network. This cellular structure, where still transparent, closely resembles adenoid or lymphoid growth; and, in fact, the deposition of the pigment matter appears to have taken place principally in the sub-pleural lymphoid tissue; it is truly lymphoid, not carcinomatous.

156. Very extensive and remarkable calcification of the pleura.—From a prisoner in the Presidency Jail. No history preserved.

157. Left lung completely calcified and compressed by a greatly thickened pleura. On the outer aspect of the superior lobe, two inches below the apex, a circumscribed patch of lymph is seen, the size of a 4-anna piece, and, at its centre, a minute puncture or perforation which communicates with the lung, and one of the smaller branches of the superior bifurcation of the left bronchus. The left side of the thorax was bulged out; the physical signs of hydro-pneumo-thorax were distinct during life, and 56 ounces of pale-greenish serum were found in this cavity after death. There are a few small, scattered patches of miliary tubercle in both lobes of this lung.—From a native male patient, aged 20. (See further, "Medical Post-mortem Records," vol. I, 1874, pp. 465-66.)

SERIES VIII.

INJURIES AND DISEASES OF THE BRAIN AND SPINAL CORD WITH THEIR MEM- BRANES AND BLOOD-VESSELS; ALSO OF THE NERVES.

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1. "Specimen showing great and extensive laceration of the right middle lobe of the brain." (Ewart.) No history.
2. A portion of the dura mater and the subjacent left cerebral hemisphere from a case of depressed and comminuted fracture of the skull, in the parietal region ("the fragments of which were removed with the trephine"). There is inflammatory thickening with blood extravasation over the surface of the dura mater for a space about three inches in length by two inches in breadth; while the brain substance beneath this shows extensive laceration. (*See also prep. No. 8, series I.*)
3. "The right-half of the brain exhibiting a large cavity occupying a considerable portion of the middle and posterior lobes. It was found filled with blood coagulum, some of which is now seen *in situ*. There was hypertrophy of the left ventricle of the heart." (Ewart.)
4. A section from the right cerebral hemisphere showing an apoplectic clot or extravasation rather larger than a walnut, occupying the posterior inferior portion of the posterior or occipital lobe, and extending forwards and inwards so as nearly to reach the posterior horn of the right lateral ventricle. From a native female, who is reported to have been admitted into the Howrah Hospital with "fever, headache, vomiting, loss of appetite, and photophobia," but who was quite sensible until three days before her death, when she became quite mad" (? maniacal). (*Presented by Assistant Surgeon Gopal Chunder Roy, Howrah Hospital.*)
5. The left anterior lobe of the cerebrum exhibiting an apoplectic extravasation, the size of a five-shilling piece, with pulpy softening (of a dark red colour) of the brain substance below it, to the depth of about half an inch. The part of the anterior lobe affected is its inferior surface,—that immediately overlying the orbital plate of the frontal. The pia mater and arachnoid are opaque and thickened from recent inflammatory effusion (lymph), which also extended over the whole of the base of the brain. On the upper surface of the brain there was considerable fulness and engorgement of the vessels of the pia mater, and numerous minute ecchymoses. From an English seaman, aged 62, who died from scorbutic dysentery on the fourth day after admission into hospital. There were no "head symptoms" until within the last forty-eight hours, when he began to talk incoherently, refused nourishment, and passed all evacuations into the bed-clothes.

There were purpuric spots all over the skin of the legs and arms. The spleen was found enlarged and soft (weighing ten ounces); the pleuræ were ecchymosed; patches of blood extravasation existed beneath the peritoneal coat of the small intestine, and superficial, dark, blood-stained ulceration of the mucous membrane of the large gut. (*See further, "Medical Post-mortem Records," vol. I, 1874, pp. 471-72.*)

6. A portion of the left cerebral hemisphere (middle lobe) external to the situation of the ganglionic centres (corpus striatum and

optic thalamus), which were not involved. An encysted apoplectic clot is seen, about the size of a hen's egg. It is laminated and firm at the periphery, soft and dark at the centre. The cause of the extravasation was probably embolism, but no obstruction of any of the large cerebral vessels in its neighbourhood could be actually demonstrated. On one of the branches of the left middle cerebral artery a little aneurismal tumour was discovered (*see* prep. No. 80), but this was at some distance from the site of this large extravasation. The right brachial artery was blocked by a recent fibrinous embolus. From an Armenian (male) patient, aged about 20, admitted into hospital with right hemiplegia and acute valvular endocarditis, —the mitral (valve) ulcerated, and covered with warty vegetations, &c. (*See* prep. No. 102, series VI.)

7. The posterior cerebral lobes of a young adult native female, showing large extravasations of blood (apoplexies) extending from the cortex downwards into the deeper brain substance, and reaching the posterior horns of the lateral ventricles on either side. The coagula are recent, dark, and soft, each about the size of a walnut. There is red softening and considerable laceration and destruction of the brain tissue around each clot for a distance varying from half an inch to an inch.

Examined microscopically, the vessels of the pia mater immediately over the blood extravasations, and also the more delicate cerebral arteries proper imbedded in or skirting the site of these lesions, are found decidedly fatty—*i.e.*, with minute oil granules and globules beneath the external coat, forming opaque dark clusters and streaks along the course of these vessels. The latter are soft and brittle; many are found ruptured, and others with minute ecchymoses along their outlines, or surrounding portions of their channels. The cerebral substance proper is highly granular; the nerve fibres show molecular degeneration of the contents of the tubules. Very few granule-cells and free nuclei are visible, but large numbers of blood corpuscles, entire or withered and altered; a few crystals of hæmatoidin, and much free molecular fat. No new growth is observed. The cause of the apoplexies is therefore clearly attributable to fatty (not atheromatous) degeneration of the cerebral vessels, and this, in turn, may very probably be regarded as associated with granular degeneration of the kidneys, which affected both these organs to a very marked extent.

The patient was admitted into hospital insensible, with convulsive movements of the upper extremities and occasional vomiting. She died comatose about thirty-six hours after. The urine was highly albuminous. No paralysis. (*See* further, "*Medical Post-mortem Records*," vol. I, 1877, pp. 385-86.)

8. A large apoplectic clot occupying the right middle lobe of the cerebrum, and reaching from the surface for fully two inches into the brain substance. It is narrow at the periphery, becomes broader as it extends inwards. It just touches, but does not actually involve the right corpus striatum and optic thalamus. At the posterior inferior extremity of the left posterior cerebral lobe there was another apoplectic extravasation the size of a hazelnut.—From a native (Mahomedan) male, aged 40, who died

in hospital. (*See further, "Medieal Post-mortem Records,"* vol. III, 1880, pp. 603-4.)

9. "A fibrous tumour from the left hemisphere of the brain of an Abyssinian (Mahomedan), aged 48, who died from apoplexy." (Ewart.)

This is an apoplectic clot, not a fibrous tumour, as above described. It is ovoid in shape, and about the size of a hen's egg. The circumferential portion is firm; towards the centre it is soft, of brownish-yellow colour, and crumbles readily when incised or pressed.

On microscopic examination, towards the periphery an imperfect kind of capsule of delicate connective tissue can be distinguished, and still deeper also, an attempt at fibrillation of structure; but the main bulk of the little mass consists of altered blood-cells, with plates of cholesterine, a few hæmatoidin crystals, and many pigmented cells and granules.

10. A little cyst, the size of a pea, found imbedded about a quarter of an inch from the surface, in the upper part of the anterior extremity of the left anterior cerebral lobe. It was surrounded by yellowish softening of the brain substance for a distance of from half to three-fourths of an inch. The cyst-wall is composed of delicate but well-formed connective tissue, and its contents consist of soft, curdy or cheesy material, containing no formed elements, but only granular and molecular fat, and a little pigment matter. The bones of the skull were healthy, and also all other parts of the brain. The cyst had no immediate connection with any of the cerebral vessels, which were also normal. It probably represents the remains of an old apoplectic extravasation (an encysted apoplexy).—From an epileptic native (male), aged 30, who died in hospital.

11. The right corpus striatum and optic thalamus of a Mahomedan (male) patient, aged 50, who was admitted into hospital with left hemiplegia and aphasia. The specimen shows a hæmorrhagic clot, about the size of a walnut, and of a yellowish-brown colour, situated deeply at the junction of the above ganglia, but chiefly involving the corpus striatum. The surrounding brain substance is in a state of white softening for a considerable distance. The delicate blood-vessels passing into this disorganised corpus striatum through the anterior perforated space—*i.e.*, branches of the right middle cerebral artery—were found, on microscopic examination, thickened, brittle, and atheromatous, and so also were the vessels supplying the striated body on the left side.

The patient had syphilis when 20 years of age, followed by secondary symptoms for about four years afterwards. He was a ganja-smoker, and the paralysis had come on suddenly, after smoking a pipe of this drug, about ten days prior to his admission into hospital. (*See further, "Medieal Post-mortem Records,"* vol. I, 1873, p. 44.)

12. A specimen showing red hæmorrhagic softening of the left corpus striatum, this condition extending downwards to nearly the base

of the brain, and backwards so as just to touch the optic thalamus. Multiple small circumscribed spots of similar softening were found in other parts of the brain: *e.g.*, in the right fissure of Sylvius; in the anterior fissure; on the inferior aspect of the left posterior cerebral lobe; at the surface of the left half of the cerebellum, &c. From a Hindu male, aged 30, who died in hospital from chronic empyema, treated by drainage and carbolic acid injections, &c. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 23-24.)

13. A section from the left corpus striatum. This body, when "viewed from the interior of the lateral ventricle, looked yellow, and its outline concave instead of being convex. When incised a small quantity of opaque serous fluid exuded, and the grey matter around was somewhat softened." It appeared, therefore, to represent the remains of an old apoplectic clot. The patient, a European gentleman, was known to have suffered from an apoplectic seizure, and to have recovered from the same after a change to Europe. On examining microscopically the brain tissue around this lesion "an increased quantity of fat granules, of varying size, were seen, and a few altered nerve-cells and tubules."

With this specimen are preserved the pons Varolii, crura cerebri, and medulla oblongata of the same case. A little to the left of the median line, on the inferior surface of the pons, and corresponding to the distribution of the branches of the basilar artery, there is seen a patch of softening or ramollissement, from which, in the fresh state, there was "an escape of semi-liquid and broken-down nerve tissue. The softening penetrates deeply into the substance of the pons, affecting the upward fibres from the pyramidal and olivary bodies." (Ewart.) (*Presented by Professor J. Fayrer, M.D., &c.*)

14. A portion of the brain with an old (apoplectic) cyst in the right corpus striatum. It is about the size of a hazelnut, and situated about a third of an inch below the ventricular surface of the striated body, near its junction with the optic thalamus. It contained a little pale serous fluid, and is lined by a delicate membrane, upon which minute blood-vessels are seen to ramify. Nearer the median line a small patch of thickened and cicatricial-like grey matter is also to be seen. From a European male, aged 45, who was an inmate of the hospital for about seven years, suffering from partial paralysis of the lower limbs and of the left arm, with rigidity of the muscles of these parts, some contraction of the fingers and toes, inco-ordinate action of the muscles in the affected limbs, and impairment of speech. He died from bronchitis and dysentery.
15. The right corpus striatum with a small rounded cyst imbedded in it. From a native male, aged about 50 (a mehter in the Medical College Hospital), who had for about ten years been partially hemiplegic (right side), and died of pulmonary phthisis.

The cyst-wall, as seen under the microscope, is composed of delicate, closely-woven connective tissue, with a few capillary vessels, thin-walled, granular and fatty, and much molecular fat. The contents are yellowish-white and cheesy, and consist of fat globules and granules, with a few degenerate nerve-cells, fragments of nerve-fasciculi, and a great abundance of cholesterine plates. A little dark pigmentary matter (no true hæmatoidin crystals) is also found amidst the fatty *débris*. The cyst is the size of a small hazelnut. The brain tissue around it was in a state of pulpy white-softening. The former appears therefore to be the remains of a limited and circumscribed old blood extravasation (encysted apoplexy). (See further, "Medical *Post-mortem* Records," vol. II, 1876, pp. 109-110.)

16. A section from the brain of a native female, aged 30, who died from the gradual exhaustion attending a very large abscess of the liver, which was opened antiseptically, and treated by drainage, &c. A patch of "red-softening," the size of a hazelnut, and the result evidently of a small extravasation of blood (apoplexy), is seen at the posterior third of the grey portion of the left optic thalamus. A similar but larger patch of softening affected the under surface of the cerebellum on either side of the posterior median fissure. No thrombosis or embolism of the cerebral or cerebellar vessels could be detected. (See further, "Medical *Post-mortem* Records," vol. III, 1879, pp. 313-14).
17. A preparation showing a small extravasation of blood, a little larger in area than a spilt-pea, in the pons Varolii, at about its centre. It is surrounded by pinkish softening, extending downwards to the base of the brain, forwards along the superficial portions of the crura cerebri, and upwards into the corpora quadrigemina. The corpora striata and optic thalami were healthy. This apoplectic effusion seems to have resulted from the rupture of several minute capillary vessels in the posterior perforated space—branches of the basilar and posterior cerebral arteries. The lateral and third ventricles were found filled with sanguineous serum. There was no thrombosis or embolism of the vessels at the base of the brain. From a native male, admitted into hospital perfectly insensible and comatose, and who died within forty-eight hours.
18. Portion of brain substance and superjacent dura mater from the anterior lobe of the right cerebral hemisphere; obtained from a Hindu male, aged 33, who was admitted into hospital with recent right hemiplegia. He stated that the paralysis had come on quite suddenly about three weeks previously. The day before he had walked into Calcutta and back to his village, a distance of about thirty miles. In addition to the paralysis of the right arm and leg, there was hemi-anæsthesia of the same side, and ptosis of the *left* eyelid. The patient had suffered from syphilis a year ago. He died comatose on the fifteenth day after admission.

The portion of dura mater which covers the anterior aspect of the right anterior cerebral lobe shows an opaque yellowish patch of thickening, the size of an eight-anna piece. Its under surface was adherent to the subjacent brain tissue. The latter (also preserved) is in a state of "yellow softening," this condition extending to the inferior surfaces of both anterior cerebral lobes, on either side of the longitudinal fissure. In these parts the cerebral substance was quite pulpy, and readily broke down under a gentle stream of water.

The olfactory bulbs were much atrophied—in fact, had almost entirely disappeared. The left optic nerve was inflamed and thickened, but the right was healthy. The left motor oculi was also enlarged, thickened, and highly vascular; the right healthy. All the other cranial nerves were normal. The whole of the left crus of the cerebrum was diffuent. The corpus callosum and fornix were soft; the lateral ventricles distended with pinkish serum. The corpus striatum and optic thalamus on the left side were quite pulpy, and on section of a pale-yellow colour. The corpus striatum on the right side was somewhat flattened and atrophied, but both it and the thalamus were pretty firm in consistency. The pons and medulla were abnormally vascular. Almost the whole of the anterior, middle, and posterior lobes of the cerebrum on the left side were found in a state of "yellow softening." The other organs of the body were healthy. (*See also prep. No. 70.*)

19. The left corpus striatum with a central spot of "yellow softening," the size of a large pea. From an Irish seaman, aged 38, who died from embolism of the basilar artery (*see prep. No. 71*). All the vessels forming the Circle of Willis were atheromatous. The patient was admitted insensible, and died within eight hours. (*See further, "Medical Post-mortem Records," vol. I, 1874, pp. 273-74.*)

20. A portion of the brain of an East Indian female, aged 65, showing chronic (yellowish) softening of the right posterior cerebral lobe, extending into the contiguous structure of the corpus striatum and optic thalamus. The patient was admitted into hospital with complete left hemiplegia, of long standing. The mental faculties were not markedly impaired, and she remained sensible until about the last 48 hours of life, when, becoming gradually drowsy, she lapsed into coma, and thus died. All the vessels of the Circle of Willis exhibited extreme opacity, softening, and fatty degeneration. (*See prep. No. 85.*)

21. A preparation illustrating the extension of acute inflammation from the internal ear to the adjacent portion of the middle cerebral lobe, and eventuating in abscess of the brain. The auditory canal in the left petrous bone has been laid open throughout its extent, as also the tympanum. In the cerebral substance immediately overlying these parts several small more or less circumscribed abscesses are seen. No history.

22. A portion of the brain showing the cavities of two abscesses. One, about the size of a pigeon's egg, is situated in the substance

of the left optie thalamus; the other, rather larger than a pea, in the corresponding striated body. Both are distinctly circumscribed, and have the appearance of being encysted by a delicate capsule of connective tissue. They do not intercommunicate. No history.

23. "A preparation showing the cavity of a circular abscess, about two inches in diameter, in the left hemisphere of the brain. From a female who died in the lunatic asylum." (Ewart.) The excavation is situated in the left posterior cerebral lobe, and apparently in close connection with, if not actually involving the optie thalamus of this side. (*Presented by Dr. S. Cantor.*)
24. An abscess cavity, as large as a hen's egg, situated on the inferior surface of the right anterior lobe of the cerebrum. Above it is preserved the portion of the dura mater which was adherent to the abscess, and lined the cribriform plate of the ethmoid and adjacent portion of the orbital plate of the frontal. It is seen perforated by a rounded soft growth, a prolongation upwards of a myxomatous polypoid tumour, which filled the nares, projected into the pharynx, and, absorbing the cribriform plate, entered the skull. Cerebral meningitis, with the formation of the above abscess was the result, and death rapidly ensued.—From a native male, aged 25.
25. Abscesses of the brain. A portion of the right posterior cerebral lobe exhibiting an abscess-cavity, the size of a hen's egg, situated about a quarter of an inch below the upper surface, and at the posterior pointed or rounded extremity of this lobe. It was filled with thick, greenish-yellow pus. Its outline is well defined, and it is seen to be lined by a kind of pyogenic membrane. Immediately around this large abscess several smaller ones are seen, varying in size from a nutmeg to a pea.—From a European sailor, aged 24, who died in hospital. (*See further, "Medical Post-mortem Records," vol. II, 1877, pp. 549-50.*)
26. "The cerebellum, at the centre of the superior surface of which a part of the substance of the same has been destroyed by the formation of an abscess." (Ewart.) No history.
27. A portion of the brain of a semi-idiotic native lad, aged about sixteen years, who died thirty-six hours after the removal of a large fibroid tumour from the left thigh. The corpora striata and optie thalami show considerable firmness and rigidity, the medulla oblongata is the seat of sclerosis, affecting chiefly its posterior columns, and passing upwards into the pons and left optie thalamus.

Sections examined microscopically (after hardening and staining) exhibit considerable hyperplasia of the connective tissue (neuroglia) of the posterior columns above their divergence from the cord, *i.e.*, at the floor of the fourth ventricle. Small, round, and fusiform cells are found distributed irregularly amidst the proper nervous elements,—displacing them, and causing their atrophy. A large number of 'vacuolar' spaces are also observed, giving portions of the sections a cribriform appearance. This latter change, however, is most marked in the left optie thalamus. In the medulla some of these vacuolar spaces seem to be associated with dilatation of lymphatic or capillary vessels,—which enclose them in a kind of capsule. These spaces vary

in size from $\frac{1}{100}$ " to $\frac{1}{850}$ ". The changes above indicated appear to establish undoubtedly the presence of disseminated "grey induration" or sclerosis.

28. Greatly atrophied anterior lobe of the brain, with a portion of the investing dura mater,—from a native male, named Damoo, who "had lost a portion of the frontal bone some years before, and suffered from epilepsy." (Colles.) (*Presented by* Dr. Fayrer.)
29. Portions of pigmented brain (malarial) from a native adult (male), who died from remittent fever on the eighth day. He was admitted into hospital in a low, delirious, and restless state. On *post-mortem* examination, the vessels of the pia mater covering the superior aspect of the cerebrum were highly injected. The brain substance moderately firm; plexus vasculosa more numerous than normal. The other organs were also found more or less congested; the spleen in parts pigmented. The brain throughout, but particularly the grey matter of the cortical layer and that of the central ganglia, was of a dark leaden colour. This may still be observed in the sections which have been preserved,—taken from the surface of both cerebral hemispheres.
30. Sections from the cerebrum and cerebellum showing an inordinately dark leaden appearance of the grey matter, due to minute or fine pigmentation accumulated within the minute blood-vessels of these parts, and also partially extraneous to them. Taken from a native boy, aged 15, who had long suffered from malarious fever, and died from erysipelas of the face and pyæmia.
31. Portions of the cerebrum and cerebellum from a highly pigmented brain. In the fresh state the white substance had a dirty-yellowish appearance, while the grey matter of the convolutions, and of the central ganglia and medulla, was of a slate-grey colour. The liver was also dark and pigmented. The spleen weighed nine ounces. The patient, a native male, aged 50, died from remittent fever. He was moribund when brought to the hospital. (*See further, "Medical Post-mortem Records,"* vol. I, 1873, p. 70.)
32. Sections from the upper surfaces of both cerebral hemispheres showing a dark, leaden colour of the grey matter of the convolutions due to abnormal pigmentation. The cerebellum was similarly affected, and both the liver and spleen were enlarged, dark and soft.

Examined microscopically, the pigment matter is seen to be finely granular, and distributed chiefly along the course of distribution of the minute cerebral vessels in the grey matter, but it also penetrates the white substance. The blood found in the heart, *post-mortem*, contained much dark pigment matter, either free or contained within leucocytes (melanæmia).

From a native male, aged 14, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. II, 1878, pp. 679-80.)

33. A vertical section through one lateral half of the brain and cerebellum to show the very darkly pigmented condition of the grey matter, both that of the superficial convolutions and also of the deeper seated ganglia, &c. The liver exhibited similar changes.

The spleen was enlarged, very dark and soft, weighed $14\frac{1}{2}$ ounces. — From a native male (Mahomedan), aged 35, who died in hospital from remittent fever. (“*Medical Post-mortem Records*,” vol. II, 1878, pp. 983-84.)

34. Sections from the right and left cerebral hemispheres and from the cerebellum showing a dark-grey or leaden appearance (pigmentation) of the grey matter.

In microscopical sections, the pigment is found very dark, and granular or amorphous; it is seen following closely the outline of the minute capillaries in the cortical or grey substance, and filling the minutest of these, having apparently passed through those of larger size. In no case, however, does the obstruction appear to be complete. Similar pigment matter is scattered throughout the cerebral substance external to the vessels, and at some distance from them, but in a surprisingly small amount as compared with the dark-leaden colour of the grey matter. No other morbid change is observed.

From a native boy, aged 14, who died from remittent fever, with “head symptoms.” (“*Medical Post-mortem Records*,” vol. III, 1880, pp. 481-82.)

35. “Several small tumours of the dura mater, pressing upon the anterior lobe of the cerebrum, to which the dura mater is adherent. The patient, John Cannon, suffered from epilepsy. Died 20th January 1864.” (Colles.)

The dura mater is much thickened and leathery in consistency. The tumours referred to consist of small, imperfectly defined, nodular masses, immediately beneath this membrane, and extending for about half an inch into the subjacent brain substance. They are of gliomatous structure—consisting of round, nucleated cells, of almost uniform size, with mostly a scanty fibrillated intercellular substance, but in parts, *e.g.*, just beneath the dura mater, showing much fibrous or connective tissue continuous with that of the latter, and very freely infiltrated with fat globules and crystals.

36. A portion of the brain with a tumour situated at the surface. The latter is about the size of a walnut, is partially imbedded, partially projects from the cerebral substance. It is invested by the pia mater superficially, and has a delicate capsule which separates it, but not completely, from the surrounding parts. Examined microscopically, it consists chiefly of round cells, with large, well-developed, single nuclei, and a scanty fibrillated intercellular material, which in parts forms a small-meshed reticulum. There are also here and there, combined with the round cells, a few fusiform or spindle-shaped nucleated cells. The capillary vessels are large and numerous. The growth is probably a “glioma.”

History. “The patient showed symptoms of insanity in his life-time, and attempted to end his life by cutting his throat, in which he did not completely succeed. The larynx was completely severed below the hyoid bone, but the arteries escaped. The wound was progressing favourably, but the patient was weak, and gradually succumbed. The tumour was found *post-mortem* at the top of the left hemisphere, on the side of the longitudinal fissure. The patient had no cancerous or tuberculous deposit in any other part of the body, and his death was due to embolism of the left

auricle, which was filled with a white clot of fibrin, firmly entangled in the meshes of its wall. The veins were engorged on account of the obstruction, and the onward flow of blood must have been very limited. The tumour appears to have exercised a sedative action on the heart, and determined the clotting." (Note by Dr. Roy.)

(Presented by Dr. G. C. Roy, Civil Surgeon, Beerbhoom.)

37. "Tumour from the cerebrum supposed to be gummy." The growth is of pinkish-white colour, two inches long by an inch in thickness, and has a brain-like appearance and feel. Over one surface, which is flattened, a portion of the pia mater is still adherent; the rest of the growth has no distinct investment of any kind. On section it is seen to consist of two rounded nodules, one, the size of a betel-nut, the other, rather larger. These are separated by a band of delicate connective tissue from three to four lines in thickness, which appears to be a continuation of, or outgrowth from, the pia mater at the attached surface. A condensed-looking yellowish rim surrounds each lobe, and appears to be the line of demarcation between the opaque-white softening or degenerating portion of the growth, and its proliferating layer, which extended probably for some little distance into the surrounding cerebral tissue.

Under the microscope, a very rapidly proliferating small round cellular growth is observed, containing a small amount of fibrillated tissue. This structure is most marked at the peripheral portions of the nodules: the new-formed tissue is more opaque and fatty-looking (degenerating) towards their central portions. At the periphery also, a few blood-vessels, some of considerable size, are found; none at the central portions of the growth. The latter is probably a true gummy tumour or "syphiloma" of the brain.

"There was no recent history of syphilis in this man's case, but there appeared to be a node on the frontal bone." He was a soldier. (Presented by Surgeon C. H. Joubert, General Hospital, Calcutta.)

38. A portion of the brain of a native male patient, aged 22, admitted into hospital with hemiplegia of the right side, and a history of syphilis. A small irregular-shaped morbid growth is seen occupying the left optic thalamus and adjacent margin of the corpus striatum; it also extends backwards into the corpora quadrigemina and upper part of the left half of the medulla. On microscopical examination, the structure of the growth is found chiefly cellular, there being but little intercellular tissue; the cells are almost uniformly round, with single large nuclei, and are from two to three times the size of blood corpuscles. These cells surround small caseous nodules, varying in size from a pin's head to a pea, or a little larger; and, ramifying among them are seen small capillary and arterial vessels. The caseous portions consist of granular and molecular fat, and, in parts, of large "granule cells." The growth is therefore probably gummatous in character.
39. A gummy tumour, the size of a pea, found on *post-mortem* examination, situated close to the right optic tract. On section

it has a yellowish colour, is firm in consistency, and surrounded by a little fibrous tissue of reddish appearance.

On microscopic examination, sections exhibit a disintegrated, molecular, fatty debris (cheesy matter), constituting the yellowish opaque nucleus above described. This is surrounded by firmer material, consisting of round nucleated cells, with a few blood-vessels, and a scanty intercellular or connective tissue. The majority of the cell-elements are from two to three times the size of blood-cells, some are smaller. They apparently belong to the cerebral neuroglia, which has undergone nodular, circumscribed proliferation here, the central parts subsequently degenerating into caseous material, while the periphery still shows well-formed new growth. These characters confirm the opinion of the "gummy" nature of the tumour.

From a European male, aged 61, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. II, 1876, pp. 299-300.)

40. A portion of the right cerebral hemisphere (middle lobe), showing a tumour, the size of a small orange, which is soft and broken down towards the centre from blood extravasation.

On microscopic examination the structure appears to be gummatus.

It consists of irregular masses of small nucleated cells, mostly round, a few however spindle-shaped, with a little slightly fibrillated intercellular material. Towards the centres these are seen to be undergoing atrophy, and resulting in the formation of dépôts of granular fatty material, with pigment matter, and the debris of disorganised cerebral nerves, ruptured blood-vessels, &c., in parts, also, consisting almost entirely of altered blood-corpuscles and pigment matter, evidently the remains of large blood extravasations. There is no fatty degeneration of the blood-vessels, but these are found either thickened from an interstitial multiplication of the nuclei in their walls, or are so atrophied and thinned that they present an almost structureless outline and greatly narrowed calibre.

From a Mahomedan sailor (khelasi) who had suffered from syphilis, and was subject to epileptic fits. He was admitted into hospital with left hemiplegia, which had come on within the last few days after a "fit." There was considerable indistinctness of speech; the memory not affected. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 95-96.)

41. A small morbid growth, together with a section from the inferior surface of the right anterior cerebral lobe to which it was adherent above, while firmly fixed below to the dura mater lining the cribriform plate of the ethmoid. Examined microscopically, the structure of the little growth is seen to consist of small round cells or nuclei, imbedded in either a granular, unformed intercellular substance, or associated with slight fibrillation of the same. In parts, also, only small amorphous granular-looking foci are seen, as if the result of degenerative changes. Towards the periphery several large capillary vessels are met with; at the centre these are small, indistinct, or obscured. The whole growth is not larger than a nutmeg, and is probably gummatus.

From a native female, aged about 45, who died from epilepsy. (*See further, "Medical Post-mortem Records,"* vol. III, 1880, pp. 475-76.)

42. The pons Varolii and medulla oblongata with a circumscribed deposit or growth in the former, about the size of a small hazel-

nut. From a native male, aged 20, who died in hospital from pulmonary phthisis. The nodule is oval-shaped, and deeply imbedded in the pons. It is opaque and cheesy at the centre, gelatinous and semi-transparent at the circumference.

Examined microscopically, sections exhibit a structure composed of (1) a series of coalescent minute granules (miliary), slightly opaque from fatty metamorphosis at their centres, sparingly reticulated peripherally, where also small nucleated lymphoid-looking cells or nuclei are observed in the meshes of this reticulum; (2) a few small arteries traversing or imbedded in the new growth, some of which exhibit thickening and nuclear proliferation of the perivascular sheaths; (3) a general proliferation or multiplication of the cells of the neuroglia so as to form a nucleated growth chiefly at the periphery of the granules, or in the paler portion of the caseous mass. Many of these cells are large, granular, and multinucleated. These particulars of structure, taken with the fact of true tubercle being found at the apices of both lungs, the age of the patient, and the absence of syphilitic history or evidence of syphilitic lesions, render it highly probable that the nodule in the pons is truly tubercular.

43. A growth, the size of a pea, found in the left half of the medulla oblongata, in the olivary body, and in almost the exact position usually occupied by the "corpus dentatum." It was readily nucleated from its position. On section it is moderately firm, yellowish, and cheesy-looking towards the centre; dull white at the periphery. It is seen to consist (under the microscope) of small, round, lymphoid-looking cells in various stages of degeneration, crowded together and commingled with fragments of nerve-fibre and delicate connective tissue, atrophied capillary vessels, a small amount of blood-pigment, a few corpora amylacea, and much dark, granular, and molecular fat. The little growth appears therefore to be tubercular, the tubercle having undergone central caseous metamorphosis.

The patient, a young native adult (male), died from tubercular meningitis. There were also miliary granulations at the apices of both lungs, chronic strumous peritonitis, and incipient tubercular infiltration of the intestinal mucous membrane. (See further, "*Medical Post-mortem Records*," vol. II, 1878, pp. 743-44.)

44. A portion of the cerebellum showing a small soft nodule, the size of a hazelnut, situated just below the inferior surface of the right lobe. On microscopical examination this proved to be a secondary encephaloid growth, associated with yellow softening (fatty degeneration) of the included and surrounding cerebellar substance.—From a native female, aged 60, who died from encephaloid carcinoma of the liver.

45. Sections from the right and left cerebral hemispheres showing dark sooty deposits of melanotic cancer. They are situated just beneath the pia mater, and are very soft and pulpy in consistency. Their microscopic structure is that of true encephaloid carcinoma, only altered by pigmentary infiltration. Similar deposits were found in the liver, lungs, kidneys, bones, &c.—From an East Indian (male), aged 44.

46. "A foetus, about twenty-six weeks old, which has a very large tumour on the head, apparently continuous with the cranial contents."

The tumour is cystic in character, ovoid in shape, and a little larger than the foetal head, from which it projects in the situation of the posterior fontanelle. On examination it is found that the walls of the cyst are composed externally of greatly thickened integument (the scalp), destitute of hair, except for a short distance above the pedicle by which it is attached to the skull; internally, by a prolongation of the dura mater lining the cranial cavity. It contains about half a pint of brownish fluid, with soft, pulpy or semi-solid material, *i.e.* cerebral or brain substance, similar to that filling the cranial cavity, with which it freely communicates. The cyst is therefore a true encephalocele. (*Presented by* Dr. Cleghorn, Officiating Civil Surgeon, Cawnpore.)

47. A portion of the dura mater and falx cerebri from the frontal region of the skull, showing a perforation of the longitudinal sinus by a small, but sharp, iron nail, which is seen *in situ*, the sinus being indicated by a glass rod. There is no record of any inflammatory or other morbid condition of the brain or membranes observed in the fresh state. The specimen is from a dissecting-room subject (native male), and nothing was therefore discovered as to the mode or cause of this injury. (*See* also prep. No. 16, Series I.) (*Presented by* Assistant Surgeon Chunder Mohun Ghose.)

48. A large sanguineous cyst, found completely covering the right hemisphere of the brain. From a patient, Pedro Visconti, a Malay, who died from epilepsy. It was said that he had suffered from the disease for about four years, getting "fits" two or three times a month at irregular intervals. There was an almost uncontrollable tendency to masturbation. The bones of the skull were healthy, but the dura mater was unusually adherent to the calvarium, and, on incising this membrane, the blood-cyst forming the preparation was found resting on the pia mater, but separable from it. The under surface of the cyst-wall showed numerous branching blood-vessels derived from the pia mater, and its upper surface was glued to the dura mater by a little recent inflammatory exudation. The blood extravasation had therefore virtually taken place in the "cavity of the arachnoid." The cerebral convolutions on the right side were much flattened. The cyst-wall is from two to three lines in thickness, and composed of soft and delicate connective tissue. On being laid open, the contents of the cyst were found to consist of blood only—partly coagulated, but mostly still in the fluid condition. (*See* further, "Medical *Post-mortem* Records," vol. I, 1874, pp. 371-72).

49. "Specimen showing great thickening and adhesion of the dura mater. In some places the section demonstrates it to be fully one-fourth of an inch in diameter. The pia mater is also seen to be dull, opaque, and altered. This portion of brain was removed from a native male subject in the dissecting-room,

aged about 40. The thickening of the dura mater was opposite to the superior surface of the middle and anterior lobes. The anterior part of the anterior lobe of the left side was soft and altered in appearance. The *ramollissement* involved the whole of the anterior lobe, continuing in part as far back as the middle of the middle lobe. Internally, its extent was bounded by the great longitudinal fissure. Superiorly, it reached the surface of the left hemisphere. Inferiorly, it extended to within half an inch of the level of the left corpus striatum." (Ewart.) (*Presented by* Assistant Surgeon Jagga-bandu Bose.)

50. "Base of the brain of an adult, showing inflammatory alteration of the arachnoid and apoplectic effusion, more or less diffused, over the pons Varolii and medulla oblongata." (Ewart.) The pia mater in the fissures of Sylvius and on the inferior aspect of the anterior and middle cerebral lobes is covered by a thick layer of recent yellowish inflammatory exudation (lymph), which extends backwards also over the under surface of the pons, medulla, and cerebellum (basal meningitis). (*Presented by* Professor J. Jackson.)
51. A preparation showing a portion of the dura mater of the skull with a thickened hernial protrusion of the same at about its centre. This part is coated with inflammatory lymph, and protruded during life through a trephine hole in the left parietal bone. From a native girl, who sustained a fracture of the left parietal, but showed no "head symptoms" until some days after admission, when rigors with constitutional disturbance ensued. About half a drachm of pus was evacuated from between the bone and dura mater after removal of a circle of the former by the trephine. Pus was detected in the diploë, and, after death, was found to smear the upper surface of the dura mater around the trephine hole, as well as that portion which projected through the latter. The under surface of this membrane is also seen to be coated with lymph. There was, however, no inflammation or suppuration of the brain substance proper. (See also prep. No. 10, Series I.) (*Presented by* Professor J. Fayer.)
52. Sections from the right and left hemispheres of the brain showing waxy-like thickening and opacity of the arachnoid and pia mater, the result of acute meningitis. In the fresh state these membranes were found covered with recent sero-purulent effusion, which also extended to the base of the brain.
53. Traumatic meningitis. A portion of the dura mater of a native boy, aged five years, admitted into hospital on the 22nd October 1872, with a contused wound over the left parietal bone, caused by a buggy-wheel having passed over his head. The scalp around the wound sloughed, leaving a surface of bone denuded, about three inches long and an inch and a half wide. This necrosed, and the child then developed "head symptoms." He was trephined in two places through the dead bone. A small quantity of pus was found between the skull and the

dura mater. The boy died on the 15th November. On *post-mortem* examination pus was found spread over the left hemisphere of the cerebrum. No abscess in the brain.

The specimen shows (1) granulations sprouting from the outer surface of the dura mater to fill the trephine holes; (2) pus outside this membrane, on the left side, between the median line and the trephine holes; (3) purulent effusion on the inner aspect of the dura mater, over the left side of the falx cerebri. (*Presented by Professor J. A. Purefoy Colles.*)

54. Acute cerebro-spinal meningitis. Sections from the superior surface of both cerebral hemispheres showing an opaque and thickened condition of the arachnoid and pia mater, with an obscuring of the vessels of the latter by a recent sero-fibrinous effusion into its meshes. The membranes of the spinal cord were similarly affected (*see prep. No. 104*).—From a native male, aged 30, who died in hospital.

55. Acute cerebral meningitis. Sections from the right and left cerebral hemispheres showing a dull, opaque, and thickened appearance of the membranes (arachnoid and pia mater), due to a copious superficial and interstitial exudation of recent lymph. The congested vessels of the pia mater and the sulci between the convolutions of the brain are obscured by the same.—From a native male, aged 48.

56. Sections from the convex surfaces of both cerebral hemispheres, illustrating the morbid anatomy of acute meningitis.—From a native female, aged 22.

The dura mater was healthy. The pia mater and arachnoid are both very opaque from the presence of considerable recent inflammatory effusion (yellowish lymph) into the meshes of the former. This condition extended to the base of the brain, but there was no evidence of any tubercular deposit associated with it. The blood-vessels of the pia mater are greatly injected, and were filled with dark fluid blood. They are here and there obscured from the intensity of the inflammatory exudation. (*"Medical Post-mortem Records," vol. II, 1878, pp. 655-56.*)

57. Thickening of the dura mater, with interstitial calcareous infiltration of a portion of the same overlying the right anterior cerebral lobe.—From a subject in the dissecting-room.

58. Extensive tubercular meningitis. The pia mater is abnormally thickened, opaque, and densely crowded with small miliary granulations, which are seen to follow more or less intimately the course and distribution of the congested blood-vessels of this membrane.—No history. (*Presented by Professor Allan Webb.*)

59. A portion of the pia mater from the superior surface of the left cerebral hemisphere exhibiting granular or miliary tubercular deposit, distributed chiefly along the course of the blood-vessels. The pia mater investing the opposite hemisphere was similarly affected, as also that lining the fissures of Sylvius and the general surface of the base of the brain. Besides which, in the last situation, there was considerable recent inflammatory effusion (yellowish lymph) associated with the deposit. Both lateral

ventricles were found distended with pale-coloured serum; the corpus callosum and fornix exceedingly soft,—almost diffuent, and the corpora striata and optic thalami so much so as to cut like butter. Tubercles, chiefly miliary, were found profusely infiltrating the substance of the superior and middle lobes of the right lung, and both lobes of the left lung. A small vomica—the size of half a walnut—was situated at the apex of the latter. Scattered tubercular deposit, in the form of yellowish-white opaque hard granules, was discovered in both kidneys, and the solitary glands in the ileum were tumefied and swollen.

The patient, a young native lad, was admitted into hospital in a kind of cataleptic condition,—semi-conscious, but passing urine and fæces involuntarily. About forty-eight hours after admission he had, quite suddenly, several convulsive fits, followed by coma, with stertorous breathing and dilated pupils, and thus died.

60. Tubercular meningitis. A portion of the pia mater from the base of the brain of a child, aged twelve months, who died from acute hydrocephalus. Minute miliary granules are seen thickly distributed, especially along the course of the minute blood-vessels, throughout the portion of membrane preserved. This condition was associated with the presence of inflammatory effusion (lymph) over the whole of the upper surface of the brain; at the base, particularly in the fissures of Sylvius, and also extending along the velum interpositum and choroid plexuses into the lateral ventricles. The brain itself was soft and pale.

The lungs were diffusely infiltrated with tubercular granulations. The mesenteric glands were cheesy.

The little patient, when received into hospital, had the following symptoms:—“Constant vomiting, flatulency, and looseness of the bowels, great restlessness, moving the head on the pillow from side to side constantly, and fever with exacerbations regularly towards the evening. He gradually became weaker and more and more exhausted, but lived for twenty-four days after admission.” There was a strumous family history, and a brother had died, at the age of four, from diffuse tuberculosis.

61. A soft, spongy intra-cranial tumour, the size of a small orange, flattened from above downwards, rounded laterally. It originates from the inner surface of the dura mater, and was imbedded in the upper part of the left posterior lobe of the cerebrum, near the median line. The skull-cap was perforated by the growth, and it appeared beneath the scalp as a soft, elastic, smooth swelling. Examined in the fresh state, it had a blotched appearance, cherry-red in parts, yellowish in others, and on section was spongy and partly cystic, the cysts containing yellowish fluid, no blood. On microscopic examination, the solidest portions of the growth consist of small round nucleated cells, a few spindle-shaped, and much granular fatty infiltration of the whole structure; here and there some delicate strands of fibrous or connective tissue. The growth is therefore a round-celled sarcoma or glioma.—From a native male, aged 30.

62. The vault of the skull from the above case showing the large perforation produced by the tumour, situated at the junction of the sagittal and lambdoid sutures, and involving the posterior superior angles of both parietal bones. (*Presented by* Professor H. C. Cutcliffe.)
63. A tumour "found pressing upon the back part of the right middle lobe of the brain, at its superior surface, and adherent to the superjacent dura mater." The growth is the size of a potato, and of a yellowish-white colour on section. It is slightly lobulated and soft in consistency. Consists of small round, and a few spindle-shaped cells, with a very scanty, and not uniformly distributed intercellular substance or stroma of fine connective tissue. Contains large capillary vessels. Is probably, therefore, a glioma. (*Presented by* Assistant Surgeon Gopal Chunder Roy, Howrah.)
64. A portion of the dura mater of the brain of a Madrassee, Abdoolla, with a tumour developed from it in the left frontal region. It is somewhat "quadrangular in shape, and measures about four inches in each diameter. Anteriorly and inferiorly, the tumour is flattened out till it merges in the normal dura mater; but posteriorly and superiorly the growth is much thicker, and terminates abruptly in the healthy membrane. It is, in the thickest part, about an inch in diameter, very hard, but slightly elastic to the touch. Its outer surface is of a dull opaque colour, and convex. Its inner surface concave, and matted with the arachnoid, pia mater, and convolutions of the brain over the antero-lateral and superior half of the left hemisphere. On making a longitudinal section of the growth, it cuts like gristle. On microscopical examination it is found to consist of nothing but an intricate network of coarse fibrous tissue, with a quantity of granules adhering to the fibres here and there. It would therefore appear to be merely an exaggerated growth and augmentation of the tissues pre-existing in the dura mater.

The corresponding frontal and parietal bones of the calvarium were found to be on an average about thrice as thick as those parts of the opposite and unaffected side. The outer and inner tables much hypertrophied, and the diploë more dense than natural." (Ewart.)

The growth is, as above described, principally fibrous, but, in portions of sections made for microscopic examination, there are isolated masses composed of small round cells only, rather larger than blood corpuscles, and with distinct large nuclei. These are closely applied together at the centre, show a sparingly fibrillated intercellular tissue at the periphery, and gradually disappear as the structure becomes more fully formed, and consists, as the main bulk of the tumour does, of interlacing bundles of fibro-elastic tissue. This appearance, taken together with the remarkably hypertrophied condition of the calvarium (*see* prep. No. 4, Series II), renders it highly probable that the growth is syphilitic, *i.e.*, gummatous in character. (*Presented by* Dr J. Fayerer.)

65. The dura mater showing great thickening of its left half, which was firmly adherent to the calvarium, especially in the parietal and frontal regions. On its inner surface is seen a gelatinous-

looking, yellowish-pink, partially organized false membrane, about one-eighth of an inch in thickness, three inches in length, and an inch and a half in breadth. This membrane, together with a small fibroid growth (the size of a small hazelnut) projecting from its under surface, intervened between the dura mater and the pia mater covering the central parietal convolutions of the brain. The bones of the skull were very massive and thick. The right middle cerebral artery in the fissure of Sylvius was considerably thickened, contracted, and opaque for about half an inch from its origin, and the portions of the anterior and middle lobes of the brain bounding this fissure in front and behind were found softened and yellowish. There was an old depressed cicatrix in the right corpus striatum, which was also flattened and atrophied.

The other parts of the brain were healthy. The small growth developed from the dura mater is found, on microscopic examination, to be composed of imperfectly formed white fibrous tissue, directly continuous with the structure of the false membrane above described. All these changes appear to be syphilitic.

From an East Indian female, aged 40, who died in hospital from epilepsy.

(See further, "Medical *Post-mortem* Records," vol. III, 1880, pp. 711-12.)

66. A small fibroid-looking growth found, on *post-mortem* examination, attached at about the centre of the inferior margin of the falx cerebri. There were no indications of the presence of this tumour during life. It is about the size of a nutmeg; has a distinct fibrous capsule continuous with the proper structure of the falx. On section it is somewhat soft and spongy at the centre; firmer at the periphery. Its structure consists of white fibrous and elastic tissue chiefly, but imbedded in the same are numerous "corpora amylacea," a few flat and spindle-shaped epithelial cells, some small round cells and nuclei, with free mucoid and fatty granules. The little growth is therefore a (so-called) "psammoma."—From a native female, aged 50, who died from dysentery.

67. Osteophytes of the dura mater. This membrane presents, on the right side of the falx cerebri, and in close proximity to the longitudinal sinus, a flattened bony spicule, an inch in length, a third of an inch broad, and two to three lines in thickness. A second similar but smaller bony growth is seen a little below and to the right of the above, intimately connected with the inner or under surface of the dura mater; and a third, rather larger than a wheat-grain, still further to the right, also fixed to this membrane.

From a native male (Mahomedan), aged 40, who died from cerebral apoplexy (prep. No. 8.) (See further, "Medical *Post-mortem* Records," vol. III, 1880, pp. 603-4.)

68. Atheromatous circle of Willis, with thrombosis of the basilar artery.—From a European gentleman, who died from cerebral softening. (See prep. No. 13.) (Presented by Dr. Fayrer.)

69. A preparation of the circle of Willis, exhibiting embolism of the right internal carotid and middle cerebral arteries, from a patient who died with left hemiplegia. (*Presented by Dr. T. R. Lewis, General Hospital, Calcutta.*)
70. The circle of Willis, from a native male (Hindu), aged 33, who died from extensive yellow softening of the left anterior, middle, and posterior cerebral lobes, and of the corresponding corpus striatum and optic thalamus (*see prep. No. 18*). There was right hemiplegia and ptosis of the left eye-lid. The symptoms had set in suddenly, and death occurred (from coma) within six weeks of the attack. The patient had suffered from syphilis twelve months previously. The left middle cerebral artery is seen blocked by a firm, decolourised, fibrinous coagulum (thrombus) from its origin to its primary subdivisions. The left anterior cerebral is similarly occluded, and also a portion of the right anterior cerebral. The left posterior cerebral artery is completely obstructed, but the left posterior communicating artery remains free. On the right side, the middle and posterior cerebral arteries and the posterior communicating branch are all healthy, and contained only a small quantity of fluid blood.
71. Vessels forming the circle of Willis extensively diseased; opaque, thickened, and atheromatous. The basilar artery, at about its centre, is completely plugged; the embolus (indicated by bristles) is firm, pale-pink, and decolourised. In the fresh state was seen to be succeeded by dark, thread-like coagula—thrombi—reaching from the point of obstruction forwards to the origins of the posterior cerebral arteries, and backwards into the vertebrals. At the spot where the plug has been arrested, the walls of the artery present a very distinct opaque-white bulging (the size of half a pea),—an aneurismal-like condition. The right posterior cerebral and superior cerebellar arteries are occupied by moderately firm dark coagula, their walls irregularly spotted opaque-white. The right middle cerebral shows much the same appearances. The left anterior, middle, and posterior cerebrals are collapsed and empty, and only about half the size of the vessels in the opposite side. Their walls are atheromatous. The left middle cerebral, at the commencement of the fissure of Sylvius, exhibits a minute rent or rupture (shown by a fine glass-rod), and appears to have given way under the unequal pressure and volume of the blood-current in the attempt to establish a collateral circulation.

In this case both choroid plexuses in the descending horns of the lateral ventricles showed marked cystic degeneration, and are preserved with the atheromatous vessels.

The aortic valves and lining membrane of the aorta were atheromatous. The heart weighed 11 ounces. There was an indistinct cicatrix on the *frenum preputii*.

Taken from an Irish seaman, aged 38, admitted with symptoms of epilepsy, to which succeeded those of profound coma. (*See*)

further, "Medical *Post-mortem* Records," vol. I, 1874, pp. 273-74, and also prep. No. 19.)

72. The circle of Willis from the base of the brain of an aged East Indian woman (age 80), who died from accidental carbolic acid poisoning. All the vessels are more or less diseased—atheromatous. The left anterior, middle, and posterior cerebral, and the left posterior communicating arteries are plugged by firm pale-red coagula. In connection with the middle cerebral is also seen a little sacculated aneurism, the size of a pea, filled with soft dark coagulum. The corresponding arteries on the right side were occupied by fluid dark blood only, and presented an unusually dilated and tortuous condition.

The brain itself was firm, smelt strongly of carbolic acid. The vessels of the pia mater were intensely engorged and ecchymosed, and the cerebral substance generally was abnormally hyperæmic. (*Presented by* Professor C. O. Woodford, M.D., &c.)

73. Circle of Willis showing a firm, decolourised, fibrinous clot impacted in the right vertebral artery, extending forwards into the basilar for a short distance, and also backwards into the left vertebral. All these vessels appear to be slightly thickened and opaque.

Taken from a native male patient, aged 45, admitted into hospital with symptoms of cerebral apoplexy. He was a "ganja-smoker," and was taken ill suddenly, with convulsions, passing into coma and complete insensibility, in which state he died. (*See further*, "Medical *Post-mortem* Records," vol. I, 1875, pp. 527-28.)

74. The circle of Willis from a European female, aged 40, who died of cerebral softening. The basilar artery is slightly opaque and thickened. It is seen obstructed by a fibrinous thrombus, about the size and shape of a rice-grain. The right posterior, middle, and anterior cerebral arteries are dilated; the corresponding vessels of the opposite (left) side are contracted and small.

75. Circle of Willis from the base of the brain of an East Indian (male), aged 43, admitted into hospital completely paralysed and insensible, and who died a few hours after. The commencement of the right middle cerebral artery is opaque and dilated. It is filled by firm decolourised coagulum (an embolus), which extends in the form of softer and darker thread-like thrombi along the channel of this vessel for a distance of quite an inch, and into the right anterior cerebral and anterior communicating arteries, completely obstructing them. The left anterior cerebral is collapsed and empty. The left middle cerebral contains a moderately firm, but dark clot. The right posterior cerebral is also firmly occluded.* The left corresponding artery free. The basilar and vertebrals quite pervious. The thickened and opaque condition of the right middle cerebral, at the point of impaction of the embolus, seems to be due to secondary inflammatory changes, for, under the microscope, no fatty degeneration of the walls of the vessel could be detected, nor any similar change in the minute radicles given off by it

* Much of the obstructing material has dropped out under maceration.

in this situation, and no atheroma of any of the other arteries forming the circle of Willis.

The meninges of the brain were found highly injected; the vessels of the pia mater gorged with dark venous-looking blood. The convolutions of the right hemisphere were flattened and sunken, and the whole of the cerebral substance very soft. No inflammatory exudation into or over the meninges existed; but, as regards the brain pulp itself, the right corpus striatum, and to a less extent the right optic thalamus, were found in a state of acute red-softening, of purplish colour, and minutely ecchymosed, this condition gradually fading away in the substance of the middle cerebral lobe immediately adjoining these ganglia. The injected and abnormally vascular condition of the cerebrum extended backwards into the pons and medulla.

- 76.** Circle of Willis showing complete occlusion of the left anterior and middle cerebral arteries by an *ante mortem* fibrinous clot (thrombus), which is decolourised and adherent to the walls of these vessels. Secondary thrombi were found proceeding into the branches of both these arteries; in the former, reaching the upper surface of the corpus callosum, in the latter, the outer extremity of the fissure of Sylvius.

Numerous similarly occluded, minute, capillary vessels were found passing through the anterior perforated space into the anterior and middle cerebral lobes. The whole of the anterior lobe and the left corpus striatum were in a state of yellow-softening—almost diffluent.

The primary thrombus examined microscopically exhibited only degenerating or disintegrating blood-corpuscles, with fibrinous filaments and fatty granules,—no specific cell elements (no cancer cells, &c.)

From a native (Mahomedan) female, aged about 45, who died from seirrhus of the liver, and with symptoms of brain softening. (*See further, "Medical Post-mortem Records,"* vol. II, 1877, pp. 357-58.)

- 77.** Embolism of the basilar artery. The embolus consists of a small, hard, opaque-white body, the size of a rice-grain. It is impacted in the basilar just after its formation by the union of the two vertebral arteries. Secondary thrombi extend on either side of it into the latter arteries, and also, filling the basilar itself, pass into the posterior cerebrals for a short distance.

Examined microscopically, the embolus exhibits a laminated fibrous appearance, with a few strands of elastic tissue, and much dark granular and molecular fat—appearances which closely resemble the condition of atheroma as affecting the larger arteries, &c.; and it therefore seems very probable that the little rice-grain-like particle is a fragment of an atheromatous patch, either from the aorta (which was thus diseased in this case) or from some other large vessel; that it has been carried on in the circulation, and at last impacted in its present situation.

The patient, a native male, aged 45, was admitted with "fever," supposed to be malarial. The day after admission he suddenly became unconscious, with dilated pupils, obstructed and stertorous breathing, loss of sensation in the lower extremities, and marked rigidity of the upper limbs. All these conditions persisted, the respiration becoming more and more embar-

passed, until death took place about forty-eight hours after their onset.

78. Thrombosis of a large branch of the left middle cerebral artery. This condition was associated with softening of the anterior extremity of the middle lobe of the cerebrum on the same side, and hemiplegia (with aphasia) of the opposite or right side of the body.

The case of a native male, aged about 65, who died in hospital. (*See further, "Medical Post-mortem Records," vol. III, 1879, pp. 25-26.*)

79. The circle of Willis from the base of the brain of a Malay patient (male), aged 40, who died from pneumonia, complicating right hemiplegia. The latter had existed for about four months prior to death. There was no aphasia. The tongue was slightly deflected towards the left side. No loss of sensation in any part of the body.

The anterior half of the basilar artery is seen occupied by a firm, decolourised, fibrinous thrombus, which extends a short distance into each posterior cerebral artery. The whole of the former vessel is much contracted. The inferior surface of the pons (upon which the basilar lay) was softened, but there was no change in any of the other cerebral centres. All the arteries composing the circle of Willis are slightly thickened and atheromatous. The whole of the arch of the aorta was similarly affected, and to a very marked degree. (*See further, "Medical Post-mortem Records," vol. III, 1880, pp. 487-88.*)

80. An aneurism of one of the branches of the left middle cerebral artery, found lying close to the surface, at the extreme outer edge of the fissure of Sylvius. A small quantity of extravasated blood was found around the little (pea-like) tumour, and was evidently due to a minute rupture of the sac, which may be readily distinguished in the preparation.

From an Armenian (male) patient, aged 20, suffering from valvular disease of the heart (both mitral and aortic), and who died from a large apoplectic extravasation into the left middle cerebral lobe (*see prep. No. 6*), but apparently unconnected with the rupture of this little aneurism.

The vessels constituting the circle of Willis itself do not appear to be diseased.

81. The vessels forming the circle of Willis at the base of the brain, showing slight thickening and opacity of their walls from atheromatous changes. There is also a little aneurism—the size of a pea—attached to, and developed from, the anterior communicating artery. The sac is well formed, was entire, but accidentally cut into during dissection. It contained a little laminated fibrinous clot, and some fluid blood.

The subject was a native female, a prostitute, aged 35, who died from chronic Bright's disease, with great hypertrophy of the heart, &c. (*See further, "Medical Post-mortem Records," vol. I, 1875, pp. 943-44.*)

82. Atheromatous cerebral vessels from the base of the brain of a European (male), aged 56, who died while under treatment for a small carbuncle on the nape of the neck. The aorta and other vessels were found similarly diseased; the kidneys much contracted, and in a state of granular degeneration.

83. Atheromatous degeneration of the arteries forming the circle of Willis, from a female, aged 52, who died of hæmorrhagic apoplexy. Along all the larger vessels are observed small patches and dots of thickening affecting their walls, and presenting a yellowish-white colour. This is especially well marked in the basilar.

84. Atheromatous degeneration of the circle of Willis. The opaque yellowish-white deposit or change in the coats of the vessels is well seen in the basilar, the middle and anterior cerebrals.

From a female, aged 50, who died from cerebral apoplexy.

The patient was brought into hospital two hours before death. She was comatose, and insensible; there was hemiplegia of the right side; the breathing stertorous.

On *post-mortem* examination a large fresh clot of blood was found in the left lateral ventricle, the optic thalamus on this side quite softened and disintegrated, the septum lucidum ruptured, and the right lateral ventricle filled with fluid blood. The hæmorrhage was evidently due to the giving way of several small branches of the left middle cerebral artery.

Both cavities of the heart were hypertrophied and dilated,—the left more than the right. There was much atheromatous thickening of the lining membrane of the aorta. The kidneys were fatty and slightly granular.

85. Atheromatous circle of Willis from an East Indian female, aged 65, who died in hospital from chronic (yellow) softening of the right posterior cerebral lobe, involving, also, portions of the right optic thalamus and corpus striatum (*see* prep. No. 20).

The vessels are all seen to be opaque and thickened; their coats marked by milk-white, or yellowish patches, spots, or streaks.

Several minute vessels, from the anterior and posterior perforated spaces were examined microscopically, and exhibited very marked fatty infiltration, and softening of their walls. In the minutest branches fine, dark globules and granules of fat were seen, forming disseminated deposits beneath the external coat, and causing an irregular bulging of the same in these situations, giving the affected vessels a varicose outline. The muscular coat was also greatly obscured by similar deposit.

86. Highly atheromatous circle of Willis. The arteries, especially the basilar and middle cerebrals, are rigid; their walls thickened, and, at irregular intervals, marked by opaque, milk-white, or yellowish spots and minute patches of atheromatous degeneration.

From an East Indian female, aged 60. The whole of the aorta (thoracic and abdominal) showed similar (atheromatous) changes. The kidneys were small, contracted, and granular.

87. Calcareous degeneration or calcification of the vessels at the base of the brain.—From an East Indian female, aged 70.

88. Simple serous cysts of the choroid plexus, found in the lateral ventricles of the brain of a native female, aged 55, who died from morbus Brightii.

The cysts vary in size from a sago-grain to a large pea; have thin transparent walls of very delicate connective tissue, and contain clear limpid serous fluid.

89. A cystic condition of the choroid plexuses, in the lateral ventricles of the brain. In each a group of small simple serous cysts is seen forming a growth, the size and shape of an ordinary white grape.

From a native male, aged 60, who died from remittent fever.

90. Cystic degeneration of the choroid plexuses of both lateral ventricles of the brain. Found on *post-mortem* examination of a native male, aged about 45, who was brought to the hospital in a moribund condition, and died (within ten hours of admission) from serous apoplexy. The kidneys were contracted and granular.

91. The cerebellum, medulla, and upper part of the spinal cord of a "Waler" mare. The animal died from general paralysis of four months' duration. A distinctly circumscribed button-like thickening of the membranes of the cord, with partially organised inflammatory effusion between them and the posterior columns, may be observed about an inch below the medulla.

All the membranes of the brain were intensely congested and dark, especially at the base, and on the inferior aspects of both lateral lobes of the cerebellum. Each lateral ventricle contained some thick, yellowish lymph, larger in quantity in the right than in the left. The third and fourth ventricles were filled with the same material, only more purulent-looking. The lining membrane of all the ventricles was vividly injected and vascular. A large quantity of reddish turbid serum was accumulated between the pia mater and the middle cerebral lobes at the base of the brain.

92. Portions of dura mater covering the inferior surfaces of each lateral lobe of the cerebellum in the above case. A development of rounded, pea-like, bony growths is seen, from the under surface of this membrane. The inner aspect of the calvarium was smooth and normal in appearance opposite these growths, so that they seem to be genuine pathological products—true osteophytic developments from the dura mater itself. (*Presented by* R. S. Hart, Esq., M.R.C.V.S., Calcutta.)

93. "Laceration and division of the spinal cord and membranes, about three inches below the medulla oblongata, the consequence of fracture of the fifth cervical vertebra." (Ewart.) (*Presented by* Dr. T. W. Wilson.)

94. The cervical portion of the spinal cord and its membranes from a case of dislocation at the third intervertebral articulation. (*See* prep. No. 48, Series I.) The man, a coolie, aged 25, became almost immediately paralysed (both upper and lower extremities, &c.), but survived the accident for about twelve days.

95. The upper portion of the spinal cord showing laceration and softening, the results of fracture of the fourth and fifth cervical vertebrae. From a native female, Kamini, aged 50, who fell out of an upper window while in a drunken condition. She was brought to the hospital in a completely paralysed condition

and very prostrated, but survived the injury for twelve hours. (*Presented by* Professor J. Fayrer.)

96. A preparation exhibiting laceration, amounting to almost complete severing of the spinal cord in the cervical region, corresponding to the site of a fracture of the fifth and sixth cervical vertebræ.

The patient, a European seaman, aged 25, while semi-intoxicated, jumped off one of the jetties into the river (a height of about 14 feet), at a spot where the water was only about two feet deep. On admission into hospital there was complete paralysis of the lower extremities and trunk, but not of the upper extremities. He lived for 44½ hours. (*See further, prep. No. 45, Series I.*)

97. The spinal cord and membranes of a native male, aged 40, showing much compression and laceration in the lower dorsal region, the result of a comminuted fracture of the eleventh dorsal vertebra. There was no external wound or mark of injury. (*See further, prep. No. 51, Series I.*)

98. "Softening of the spinal cord in the lumbar region. The cavity at the centre of the softened portion was originally occupied by an apoplectic clot. The patient, a Hindu, aged 45, fell down a staircase twelve feet high, was admitted with paraplegia and retention of urine, and died 28 hours after admission. There was no fracture of the vertebræ." (Colles.)

The softening of the cord is very distinct, but all traces of blood-extravasation have now disappeared.

99. Spinal cord of a patient who died paraplegic on the 28th February 1863. "The patient, a Maltese, aged 40, was admitted for chancre into the hospital on the 28th of December 1862. On 3rd February 1863, after a severe febrile attack, attended with extreme prostration, his lower extremities, and the trunk as high up as the level of the nipples, became paralyzed. There was paralysis both of sensation and motion, which continued to the day of his decease. For the last few days of his life he suffered from low fever and delirium. The cord in the lower part of the cervical and upper part of the dorsal regions was found extensively softened. Brain, thoracic, and abdominal viscera healthy." (Ewart.) (*Presented by* Professor S. B. Partridge.)

100. "Preparation showing softening and destruction of the cord at the commencement of the cauda equina." (Ewart.) No history.

101. "Spinal cord of A. C., an Englishman, admitted into hospital on the 30th of October 1866 with stricture and pain in the lumbar region. The pain increased, he became paraplegic, and died on the 13th November 1866.

A portion of the cord, about the size of a sixpence, in the lower dorsal region, is softened and diffuent." (Colles.) The last dorsal and first lumbar vertebræ were found carious. (*See prep. No. 21, Series V.*)

102. "A portion of the spinal cord which was much congested in the situation of the cauda equina. There was a large quantity

of cerebro-spinal fluid. From a Norwegian, aged 42, who suffered from partial paraplegia brought on by pumping in a water-logged vessel at sea, when he was obliged, for long periods, to stand up to his knees in water. He retained partial use of his limbs, the left being the most paralyzed of the two. It was accompanied by great diuresis. He could control the action of the sphincter and the bladder. He had, whilst in hospital, two attacks of dysentery. During the second attack he was carried off by cholera." (Ewart.) (*Presented by* Professor J. Fayrer.)

103. Spinal cord and membranes from a case of acute cerebro-spinal meningitis,—a native male, aged 27.

The dura mater was stained pink, but its structure healthy. Between it and the other membranes of the cord considerable serous effusion was found, especially in the lumbar region. Both arachnoid and pia mater are opaque from recent inflammatory exudation (lymph). This condition is slightly marked in the cervical region, but well pronounced along the whole of the rest of the cord. The substance of the latter is softened in the lower dorsal region, but in the lumbar cut unusually firmly. The grey and white matter appeared to be throughout preternaturally vascular, but not otherwise altered.

104. Spinal cord (dura mater removed) from a case of acute cerebro-spinal meningitis,—a native male, aged 30. Both the arachnoid and pia mater are seen greatly thickened and opaque from the presence of a copious exudation of recent lymph, which covers both surfaces of the cord (itself healthy), and descended from the medulla and brain. (*See* prep. No. 54.)

105. Preparation showing an amputation at the upper third of the right leg, in which the ends of the tibia and fibula, especially the latter, are rough, jagged, and denuded of periosteum. A branch of the 'internal popliteal nerve can be traced into immediate contact with the sharp fibular extremity. The patient, a native male, aged 24, died from tetanus on the thirteenth day after the operation, and on the fifth day from the commencement of the tetanic symptoms. It is believed that the latter were attributable to the irritation of the large nerve trunk above noted, by the roughened portion of the fibula in the stump. (*See* further, "*Surgical Post-mortem Records*," vol. I, 1879, pp. 547-48.)

106. A portion of the great sciatic nerve showing acute inflammation of the sheath. The nerve itself is a little softened, but not otherwise materially affected. This condition was found associated with erysipelatous inflammation of the left thigh, and incipient softening and suppuration of the muscles on both anterior and posterior aspects. During life the patient, a native male, aged 30, complained of very severe pain along the whole course of this nerve. (*See* further, "*Surgical Post-mortem Records*," vol. I, 1880, pp. 703-4.)

107. Preparation showing bulbous enlargement of the nerve ends in a stump, about two inches below the elbow-joint. The median nerve is especially swollen and enlarged at its extremity, and

surrounded by much dense fibro-cellular tissue. The patient suffered so much pain that a secondary amputation at the lower third of the arm had to be performed. (*Presented by Professor E. Goodeve.*)

- 108.** Ring-finger of the left hand of a Negro, amputated through the middle of the metacarpal bone. The first phalanx had been removed nine months previously on account of an injury. So painful was the stump on the slightest pressure, that it rendered the hand useless for work, and the present amputation was therefore performed. On dissection, a digital branch of the median nerve supplying the outer and anterior aspects of the stump is found much enlarged, and terminating in a slight bulbar expansion opposite the first phalangeal articulation, to which, and to the palmar aspect of the base of the second phalanx, it is firmly bound down by bands of fibrous tissue. No nerve filaments can be traced beyond this point. On the inner side a small digital branch from the ulnar nerve is traced, without any appreciable enlargement, as far as the first phalangeal articulation, where it also is lost. The end of the stump is formed by the cartilaginous head of the second phalanx, covered by thickened integument. There is fibrous ankylosis of the two phalanges.

- 109.** A dissection of an old amputation stump of the left leg (lower third), to exhibit the enlarged bulbar terminations of the anterior and posterior tibial nerves, surrounded by dense fibrous and fatty tissue. The bones are rounded off and smooth.

The amputation was performed, three years previously, for gangrenous ulceration of the left foot and ankle.—From a native male, aged 40.

- 110.** Portions of the right and left ulnar and median nerves from a case of tubercular and anæsthetic ("mixed") leprosy,—an East Indian male, aged 25, who died in hospital from acute pulmonary tuberculosis. These nerves show very characteristic enlargement, thickening, and induration. Almost all the cutaneous nerves in both the upper and lower extremities were similarly affected. The disease had existed for several years.

- 111.** Specific enlargement of the peripheral nerves in leprosy. The preparation exhibits various nerves, *e.g.*, the medians, radials and ulnars from the upper extremities, and the long saphenous and musculo-cutaneous from the lower extremities of a young man (aged twenty), of pure European parentage, who had suffered from the disease for about ten years, and who died in hospital while undergoing treatment by "gurjan oil." All these nerves are enlarged to twice or three times their normal size. They are firm and rigid, and their external fibrous sheaths (neurilemma) remarkably thickened and dense.

Microscopical sections show the nerve fibres surrounded and compressed by nucleated connective tissue, which forms (as seen in the transverse section of a nerve) radiating bands, starting from the thickened neurilemma, and passing between the fibrillæ of which the nerve is composed, isolating them. The latter are atrophied and shrunken. The white substance of Schwann broken up into a granular or molecular pulp, giving, in longitudinal sections, a remarkably beaded appearance to the

nerve-filament. In parts it was found to have quite disappeared, the axis-cylinder alone remaining; and, lastly, even the latter is absent in some of the spaces mapped out by the connective tissue dissepiments above described; nothing but a granular oily *débris* occupying the place of the disorganised nerve-tubule. The thickening, induration, and enlargement of these nerves are all, therefore, due to an exaggerated connective tissue growth (hyperplasia) of the neurilemma and inter-fibrillar septa, with contemporaneous atrophy, degeneration, and gradual disappearance of the proper nerve structure.

112. A small fibroma developed in connection with the left radial nerve, and found situated on the outer side of the wrist-joint of a native lad, aged about sixteen. The growth is the size and shape of a shelled almond, of pearly-white colour at the surface, more opaque-looking on section. It is invested by a delicate capsule, formed by an expansion of the neurilemma of the nerve. The main portion of the trunk of the latter lies to one side (below) the growth, only a few nervous filaments can be traced into its proper substance, and these chiefly towards the periphery. The little tumour itself consists of very abundantly nucleated white fibrous tissue, with a few elastic filaments, and here and there a capillary vessel. It is, therefore, a fibroma, not a true neuroma.

CATALOGUE

OF THE

PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART V.

INJURIES AND DISEASES OF THE TONGUE,
TONSILS, PHARYNX, ŒSOPHAGUS,
STOMACH, INTESTINES, PERITONEUM,
LIVER AND PANCREAS, &c.

SERIES IX.

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† e=Enkephaloid; s=scirrhus; m=melanotic.

† See also series XX.

1. The tongue from a case of cholera,—a native male, aged 40, who died in the stage of collapse,—illustrating a very commonly observed *post mortem* appearance—viz., great enlargement and prominence of the circumvallatæ papillæ and mucous follicles at the base of the organ, and also of those of the pharynx. Many of the hypertrophied lingual glands show pitted surfaces.

2 Great hypertrophy of the circumvallate papillæ and mucous follicles at the base of the tongue,—from a case of cholera.

The same change, though to a less marked degree, is observed in the mucous membrane of the pharynx and œsophagus, with also, superficial shredding of epithelium in patches in the latter.

3. A similar specimen. The mucous follicles and glands stand out prominently. This condition seems attributable to two causes,—(1) the shrinking of the *surrounding tissues*, as of the tissues of the body generally, from deprivation of their moisture to add to the cholera flux; and (2) to *excessive stimulation* of the glandular structures of the entire alimentary canal, and their consequent temporary hypertrophy or enlargement.

In this case—as in almost all others of like nature—the œsophageal and peptic glands, the mucous follicles and patches of Peyer of the small intestine, and the solitary glands of the large intestine, were all similarly affected.

4. Enlargement and prominence of the glands at the base of the tongue, notably of the circumvallatæ papillæ and mucous follicles of the tonsils and pharynx,—From an East Indian boy, aged seven years, who died of cholera.

The patient was brought to the hospital about twelve hours from the commencement of the attack, in quite a collapsed condition. Reaction set in in about another twelve hours, but the urinary secretion was never established, and he died with symptoms of uræmia (convulsions, &c.) within forty-eight hours of admission.

5. Tongue showing a swollen and prominent condition of the papillæ at its base, from a case of cholera, a native male patient, aged 45.

6. An enlarged, prominent, and swollen condition of the circumvallatæ papillæ at the base of the tongue, and of the mucous follicles of the pharynx and tonsils, &c., in a case of cholera,—a European seaman, aged 26, who died collapsed five and a half hours after admission into hospital.

7. The tongue, fauces, and larynx of a native male, aged 25, who died from hydrophobia. In the recent state there was livid congestion of the mucous membrane and abnormal enlargement and vascularity of the papillary and follicular structures.—(See also prep. No. 18.)

The hydrophobic symptoms were developed five weeks after the man had been bitten by a rabid bitch. (“*Medical Post-mortem Records*,” vol. I, 1876, pp. 995-96.)

8. Gangrene of the tongue. About half an inch of the anterior portion (apex) of the tongue has completely mortified. It is of very dark colour, and almost separated from the rest of the organ,—only a few shreds of sloughy tissue serving still to

connect the two. The line of demarcation between the gangrenous and healthy structures is very distinct and abrupt. The lower jaw is rough, denuded of periosteum, and superficially necrosed. No history. (*Presented by* Professor J. Fayrer.)

9. A preparation showing a very rapidly-growing epithelioma of the right side of the tongue, which, with the corresponding half of the lower jaw, was removed by operation. The jaw was bisected at the symphysis, and sawn through again a little above the angle on the right side. The tongue was divided by a wire-céraseur.

The patient, a native male, aged 45, stated that the growth was of only six weeks' duration, and had commenced as a painful pimple on the under surface of the right border of the tongue. The man was fairly healthy looking. He was not a tobacco-smoker. All the teeth of the lower jaw were firm and quite free from decay. There was no hereditary history. "The lymphatic glands below the jaw were slightly enlarged." He died thirty-six hours after the operation from pneumonia. At the *post mortem* examination the left half of the jaw was excised, and is now united to the right and exhibited in the preparation. The growth presents the form of a shallow oval-shaped ulcer, about an inch in length, and half an inch in breadth, situated on the lateral and inferior border of the right half of the tongue, opposite the first and second molar and second bicuspid teeth. The edges are hard, the base soft and shreddy. The papillæ, mucous membrane, and submucous fibro-elastic tissue, are all more or less destroyed over the whole ulcer, so that the muscular tissue of the organ is freely exposed and partially disintegrated.

Under the microscope sections exhibit an epithelial, rapidly-progressive growth. The superficial portions show a truly epithelial structure,—large, faintly granular, mono-nucleated cells being heaped together in considerable masses, and dipping also into the deeper tissues. Numerous "nests" or "globes" are also visible. The deeper layers of the sections made exhibit a small-celled growth infiltrating freely the submucous and muscular tissues, and leading to their gradual disintegration or removal. The left half of the bisected tongue is quite free from infiltration or morbid growth; but the muscular tissue is everywhere found very highly fatty (metamorphosed). (*Presented by* Professor K. McLeod.)

10. Epithelioma of the tongue. The base and a considerable portion of the left half of the organ are seen to be destroyed by an irregular outlined, deeply excavated, and rapidly ulcerating growth, which involves a space sufficiently large to contain a walnut.

The microscopical characters are those of true epithelioma, with extensive nuclear infiltration of the subjacent and surrounding muscular and submucous tissues. The sublingual and submaxillary glands, the left half of the soft palate, and the left tonsil, are all infiltrated. The subject was a European (male), aged 50. The disease had advanced too far for any operative interference. The man's health was greatly shattered, and the specific cachexia well marked. The cancer commenced as a small

pimple on the side of the tongue eighteen months prior to his admission into hospital. There was much difficulty in deglutition, and repeated hæmorrhages occurred from the ulcerated surface. Both these circumstances told upon the patient's condition, and he died exhausted and worn out by the disease. (*See further, "Surgical Post-mortem Records," vol. I, 1875, pp. 195-96.*)

11. "Preparation showing the pharynx, larynx, and trachea of a European child, aged nearly five years. Yellowish coloured diphtheritic deposit or false membrane is very clearly exhibited in the pharynx. An ulcerated surface is also exposed behind the left tonsil. The existence of croupy deposit is observed in the superior region of the larynx." (Ewart.) The remains of the deposit over both surfaces of the soft palate and around the rima glottidis may still be easily distinguished, as also the ulcerated and excavated condition of both tonsils, but the rest of the membranous exudation referred to is no longer visible. (*Presented by Dr. W. Martin.*)
12. A fish-bone, nearly two inches in length, and with very sharp-pointed extremities, removed from the lower part of the œsophagus of a lady. A probang having been passed beyond the point where the bone was ascertained to be lodged, the latter became fixed in the sponge of the instrument, and was thus successfully withdrawn. (*Presented by Dr. J. Ewart.*)
13. "Perforation of the œsophagus and aorta, caused by a fragment of pigeon-bone." The perforation of the œsophagus is situated a little to the left of the median line, and the aorta has been penetrated at the descending portion of the arch, just a little below the origin of the left subclavian artery. A blue glass rod indicates the direction taken by the piece of bone, which is also attached to the preparation by a thread, near this spot. The fragment of bone is about an inch and a half in length, about the thickness of a knitting-needle, and very sharp and pointed at one extremity. (*Presented by Surgeon J. O'Brien, 43rd A. L. I., Gowhatty, Assam.*)
14. The trachea and œsophagus of a native boy, aged twelve years, who died from cancrum oris and dysentery. The lower lip, for about an inch on either side of the median line, was sloughy and disorganised, and the bone below it bare, rough, and destitute of periosteum.
In the upper part of the œsophagus the mucous membrane and sub-mucous tissues show circumscribed sloughing over a space about two inches in length and half an inch in breadth. This condition extends into the adjacent portion of the trachea, exposing the cartilagenous rings, and producing softening and superficial ulceration of the mucous membrane for about an inch. (*See further, "Medical Post-mortem Records," vol. III, 1880, pp. 553-54.*)
15. The larynx, pharynx, and a portion of the trachea showing (1) the opening made by the operation of laryngotomy, necessitated on account of impending suffocation due to (2) a large

abscess, with thick offensive purulent contents, situated in the right wall of the pharynx, between it and the larynx, pressing upon, and thus greatly obstructing or narrowing the rima glottidis; (3) slight superficial ulceration of the mucous membrane on the under surface of the epiglottis, and over two or three of the upper rings of the trachea; the latter produced by the pressure of the metallic tracheotomy-tube employed in this case. The patient, a native male, aged about 40, died from exhaustion and lobular pneumonia three weeks after the operation.

16. "The tongue, pharynx, upper two-thirds of the œsophagus, epiglottis, larynx, and trachea, as far as the bifurcation. The œsophagus and pharynx are opened from behind, exposing, in the lower part of the tube, nodules of cancerous material beneath its mucous membrane. Higher up, and including the pharynx, the cancerous substance has undergone degeneration, softening, and ulceration, leading to the destruction of a portion of the mucous membrane, muscular structure, and the soft parts interposed between it and the larynx which, at this point, has been all but perforated. The trachea and larynx have been opened along the anterior aspect, illustrating malignant ulceration of the left vocal cords, and several nodules of medullary matter deposited beneath the mucous membrane of the lower part of the larynx."

"On microscopical examination, large cancer cells, more or less filled with granular and fatty matter, caudate and endogenous cells were discovered both in the œsophageal and laryngeal nodules. The cervical and bronchial glands were much enlarged by strumous and black pigmentary infiltration." (Ewart.)

"The patient, Thomas Phillip, Portuguese, aged 57, could not swallow for some days prior to death. Neither could a tube be passed, owing to œsophageal obstruction; moreover, his respiration was so seriously embarrassed, that tracheotomy was performed. He sank from asthenia eleven days after the operation." (Presented by Professor J. Fayrer.)

17. "Stricture of the œsophagus, apparently due to muscular spasm. The patient died after a prolonged illness."

There was no history of any injury (as from corrosive poisoning, &c.) and the lining membrane as well as the muscular and other tissues of the œsophagus present nothing abnormal. (Presented by Surgeon J. O'Brien, 43rd A. L. I., Gowhatty, Assam.)

18. The tongue, fauces, pharynx, œsophagus, and larynx of a native male, aged 34, who died from hydrophobia.

The papillæ of the tongue are enlarged and prominent, and, in the recent state, were greatly injected and vascular, especially those at the posterior and back part of the organ. There is longitudinal stripping of the mucous membrane of the œsophagus, particularly at its lower end, and much denudation of epithelium. In the larynx (when fresh) there was noticed

considerable thickening and vascularity of the epiglottis, with some œdema of its upper and lower surfaces and margins.

Nothing specifically pathological was found in any of the other organs of the body in this case, except that the membranes of the brain and both lungs were abnormally dark, and loaded with fluid venous-looking blood. (*See further, "Surgical Post-mortem Records," vol. I. 1873, p. 28.*)

19. "A stomach, in which there is an oval bullet-opening, admitting the forefinger, and a smaller one into which a pencil can be barely introduced. There is also shown a traumatic aneurismal sac, about as large as a pigeon's egg, communicating with one of the branches of the pancreatic artery. The patient was a sepoy stationed at Rawul Pindee. He died from hæmatemesis, the hæmorrhage having flowed from the ruptured sac, through the small opening, into the cavity of the stomach." (Ewart.) (*Presented by Dr. J. Fairweather.*)
 20. A stomach which has been turned inside out to show the effects of a corrosive poison upon the mucous lining of the organ. The latter, over almost the whole of the œsophageal half, and especially along the greater curvature, is seen superficially eroded and even ulcerated, with much puckering and corrugation of the mucous coat. Near the pylorus there is a still adherent small dark slough.—From a case of arsenical poisoning.
 21. "A stomach inflamed from the swallowing of yellow arsenic. The mucous membrane is much puckered and raised into ridges." (Ewart.) A sharply defined, oval-shaped perforation, sufficiently large to admit a goose-quill, is seen to have taken place through the posterior wall, near the lesser curvature, and about two inches from the œsophageal opening.
 22. Stomach showing the effects of poisoning by arsenious acid. The whole mucous membrane is highly inflamed, much corrugated and thickened. Much inflammatory effusion (lymph) has taken place along the greater curvature and around the pylorus, so that the surface here, in addition to its eroded and ulcerated condition, presents a rough, granular and thickened appearance, and adjacent ridges of the mucous membrane are partially united and matted together by the same material.
 23. A portion of the stomach from a case of arsenical poisoning. No ulceration has occurred, but, in the recent state, there was intense, livid congestion, and much softening of the mucous coat, and the peptic glands and mucous follicles generally were hypertrophied, prominent, and irritable looking. The latter condition may still be observed.
- The heart was examined, but no injection or ecchymosis of the endocardial lining membrane was discovered. (*Presented by Dr. C. O. Woodford, Police Surgeon.*)
24. The stomach of a young native female, supposed to have died from diarrhœa. It exhibits marked signs of acute inflammation from *arsenical poisoning*. The surface of the stomach, in the recent state, was of a bright vermilion colour—in parts almost

purple. The whole of the mucous membrane is much softened, especially along the lesser curvature, and at the pylorus. In these situations it is shreddy, flocculent, partially detached, hangs in soft woolly masses. No ulceration or extensive sloughing or perforation has taken place. An immense number of minute golden-yellow metallic particles (sulphide of arsenic) are scattered diffusely over the whole inflamed surface. The contents of the stomach consisted of dark, grumous, and sanguinolent fluid, with a large quantity of undissolved arsenic.

The duodenum presented similar appearances, but not to so marked a degree, and evidences of acute irritation extended a considerable distance into the rest of the small intestine. There was much shredding of the mucous membrane of the œsophagus, in the form of delicate, longitudinal, fringe-like, detached fragments, and deep-purple injection of the submucous tissues. There was very marked sub-endocardial ecchymosis of the left ventricle of the heart, most intense along the septum ventriculorum and papillary muscles, (*Presented by Professor C. O. Woodford.*)

25. A portion of the œsophagus, the stomach, and the duodenum of a native female, aged 15 years, who, on the 8th of May 1874, swallowed a small quantity—accordingly to her own statement a teaspoonful—of strong sulphuric acid for the cure of enlargement of the spleen, from which she was suffering. The patient died in hospital from inanition and asthenia on the 28th of June (seven weeks and two days after). There is nothing remarkable in the condition of the œsophagus. The mucous membrane of the stomach is everywhere much thinned, and in parts discoloured, presenting a dark-slate or greyish appearance; in others,—especially along the lesser curvature and pyloric half of the organ,—dark purple.* Stretching from the œsophageal opening to the pylorus (along the upper curvature), there is seen, very distinctly, an almost completely cicatrised, elongated, irregular-shaped ulcer, about $3\frac{1}{2}$ inches in length and 2 inches in breadth (at its widest part). Numerous radiating processes pass outwards in all directions from this ulcer into the surrounding mucous membrane. The reparative material consists of lowly-formed (immature) connective tissue. The duodenum was found deeply bile-stained, and coated with a thick layer of dark-greenish mucus, but no loss of tissue appears to have taken place.

26. The stomach and duodenum of a young native female, who had taken strong sulphuric acid as a remedy for “spleen.” She was treated in hospital for two months and six days; gradually became weaker and emaciated from inability to retain and digest food, and died at last somewhat suddenly. There was constant aching pain at the epigastrium.

The mucous membrane of the stomach and duodenum is covered with numerous small superficial ulcers, of a more or less rounded outline. At the pylorus there is much cicatricial contraction with thickening of the muscular coat, so that a strictured

* Much of this discolouration has been lost since maceration of the stomach in spirit.

condition of this orifice has taken place, and barely admits now a crow-quill. In the preparation a glass-rod, the exact size of the contracted orifice, has been passed through it.

27. The stomach of an aged East Indian woman who died from accidental *carbolic acid poisoning*. There was a strong odour of the acid on opening the stomach; the mucous membrane was throughout moderately congested, and much softened. In parts it presented a superficially abraded or eroded condition, which can still be seen in the preparation, but there is no actual ulceration.
28. "An excellent illustration of the effects of chronic gastritis. All the coats of the stomach are thickened. But the mucous membrane is enormously increased in diameter, and arranged in longitudinal folds, some of which project half an inch from the general level of the internal surface of the organ." (Ewart.) No history.
29. "Chronic gastritis, occurring in a habitual drunkard (European). There is thickening of the mucous membrane, which is arranged in longitudinal folds, many of which are a line and a half in height. These appearances are most marked along the greater curvature. The peritoneal tunic is thickened and opaque." (Ewart.) There appears to be also a good deal of recent inflammatory effusion over the surface of the mucous membrane, for about two inches around the pyloric orifice.
30. The pyloric half of the stomach showing great thickening, rigidity and corrugation of the mucous membrane, the results of chronic gastritis. Around the pyloric opening itself there are three or four shallow superficial ulcers, of oval or rounded shape; the largest, the size of a four-anna piece (sixpence), the smallest, of a split-pea. They have abruptly-defined sharp edges, and expose the sub-mucous tissue. (*Presented by* Professor Edward Goodeve.)
31. General hypertrophy of the walls of the stomach, from a case of morbus Brightii. The patient, a Hindu male, aged 60, had long suffered from symptoms of chronic gastritis. The hypertrophy involves all the coats, but particularly the submucous and muscular; in parts, their combined thickness measures fully a third of an inch. Scattered irregularly over the mucous surface are a few shallow superficial ulcers.
32. The stomach of a "native female patient, admitted into the Howrah hospital with symptoms of cholera—a dejected face; tenderness in the epigastrium; vomiting of mucus and bile, but no blood; pulse weak and small; stools formed. No history or evidences of irritant poisoning."

The mucous membrane of the stomach is thrown into huge, thick folds; the organ altogether much contracted. In the sulci between the folds, and partly smeared over them, is a good deal of inspissated, shreddy-looking mucus. The appearances are those of acute gastritis. (*Presented by* Assistant Surgeon Gopal Chunder Roy, Howrah.)

33. Acute gastritis (catarrhal). The mucous membrane of the whole of the stomach shows intense vascularity, ecchymosis, and oedema; and is almost uniformly covered with soft, granular, recent exudation material, in parts also is superficially eroded. There was no history or evidence of any kind of irritant poisoning.

From a native female, aged about 25, admitted into the hospital in the last month of pregnancy, with severe hæmatemesis and great prostration. She died an hour after admission. (*Presented by Professor T. E. Charles.*)

34. The pyloric end of the stomach of a native male patient who suffered from "constant vomiting after food, constipated bowels, hicough and drowsiness."

The pylorus and about three inches of the mucous membrane of the stomach above it are greatly thickened, and very hard and firm. All the coats of the stomach are here hypertrophied, and the channel, in consequence, so narrowed that a director can barely pass through it. The mucous membrane is thick, soft, covered with minute villous-like tufts (as seen under the microscope). The sub-mucous tissues are also greatly hypertrophied, the smooth muscular fibre being highly developed (hyperplasia), and the fibro-elastic tissue exaggerated. The glandular structures are compressed and atrophied, their lining epithelium highly infiltrated with fat.

No abnormal cell elements can anywhere be detected, even after the most careful examination. The condition seems to be that of purely *fibroid thickening of the pylorus*; and, although the parts are firm and very scirrhus-like, there is no evidence of stroma, cancer-cell, &c. The rest of the stomach, including its œsophageal end (not preserved), exhibited great thinning and attenuation of the gastric walls, probably from constant over-distension owing to the obstruction at the pylorus. (*Presented by Assistant Surgeon Gopal Chunder Roy, Howrah.*)

35. The cardiac half of the stomach showing fibroid thickening at the œsophageal orifice, with sloughing of the mucous membrane, for about three inches beyond this, on the anterior and posterior walls, near the lesser curvature. On the anterior surface it almost reaches the peritoneal coat; on the posterior, the organ is firmly fixed to the pancreas. Sections made through the indurated coats of the stomach in close proximity to the sloughing ulcer at the œsophageal end exhibit, under the microscope, no cancerous structure. The peptic and other glands are found atrophied, and the submucous and muscular coats thickly infiltrated with fat granules and globules, small free nuclei, and blood cells. In parts also an abundance of micrococci is found. The ulceration and induration both appear to be simple in character, and the result of very great loss of vitality and physical prostration at the close of a lingering disease (chronic dysentery), from which the patient, a European (male), aged 53 died. (*See further, "Medical Post-mortem Records," vol. II, 1876, pp. 61-62.*)

36. "The stomach of an East Indian child, aged about six months. Its coats are very much softened and gelatinized, and a large perforating ulcer is seen at the fundus towards the splenic end. The spleen was found applied over this opening, and prevented, to some extent, the escape of the contents of the stomach into the general peritoneal cavity. The child died from inanition." (*Presented by Professor C. O. Woodford.*)
37. A stomach the mucous membrane of which is displayed externally to show the general thinning, superficial softening, erosion and pitting which it has undergone, apparently, chiefly from *post mortem* digestion, but also probably as the result of long-continued disease of the alimentary canal. The subject was a native female, aged 50, who died very much emaciated and completely worn out from extensive ulceration of the rectum following upon dysentery. The autopsy was performed $7\frac{3}{4}$ hours after death.
38. Ulceration of the mucous membrane of the stomach. Four ulcers are seen in the preparation,—three at the pylorus, one near the lesser curvature. Of the former, one has perforated all the coats of the organ; the other two expose the muscular coat. The ulcer at the lesser curvature is deep, somewhat funnel-shaped, and the size of a two-anna piece. It also perforates all the ventral tunics. The mucous surface, for about half an inch around it, is thickened and rough; the peritoneal coat, to about the same extent, shows similar changes.

All the ulcers have clean-cut, sharp margins, and present a typically punched-out appearance. No history. (*Presented by Professor Edward Goodeve.*)
39. "Perforating ulcer of the stomach, situated at the upper and posterior surface of the organ, near the lesser curvature. The ulcer is about the size of a shilling, with thickened and defined edges. The perforation is somewhat oblique, and would admit a No. 12 catheter. The parts of the stomach around the ulcer are thickened and indurated; the organ is otherwise healthy. Its peritoneal covering has some flakes of lymph adherent to it (as also had that of the lower surface of the liver).—From a European (male) patient, who died of peritonitis." (Colles.)
40. The pylorus and adjacent portion of the stomach, showing several chronic shallow ulcers affecting the mucous membrane. A ring of these, undergoing cicatricial contraction, is situated at the pylorus itself, and has produced much narrowing and constriction of this orifice, with which is also associated a good deal of annular thickening of the submucous coat. The ulcers have sharply-defined, "punched-out" looking edges, and, in the recent state, were covered with a little soft, rusty-looking material, probably altered blood.—Taken from a native male, aged 45, who died much emaciated from chronic diarrhoea. ("Medical *Post-mortem* Records," vol. II, 1876, pp. 39-40.)
41. Perforating ulcer of the stomach. This organ is large and dilated at the œsophageal end, but the mucous membrane here is

quite healthy. At the pylorus, about half an inch from the pyloric orifice, and on the anterior wall of the stomach, near the lesser curvature, there is a perforating ulcer, irregularly rounded in outline, and about the size of an eight-anna (shilling) piece. Its margins are thickened and anæmic. It has a funnel-like shape when viewed from the interior, owing to the gradual and unequal invasion of the successive coats of the stomach from within outwards. The latter are matted together and immovable upon each other. For half an inch around the spot where the ulcer has perforated, the peritoneal coat is covered by much granular recent lymph. The opening has sharp edges, and a cleanly "punched-out" character.

The peritoneum generally was acutely inflamed; the coils of the intestine matted together, and the pyloric end of the stomach glued to the under surface of the liver. There was no injection or inflammatory redness of any portion of the ventral mucous membrane. The ulcer seems to have been of long standing, but the perforation was probably sudden, and acute peritonitis the fatal result. In the stomach about two ounces of partially digested food was found (potato-peelings and other vegetable matter).

The patient, a Mahomedan, aged 32, by occupation a mason, was brought into hospital moribund and collapsed, and died about five hours after admission. It was ascertained that he had suffered from dyspepsia for about four months. He had come home from work in the evening, and partaken of his usual food, but was, almost immediately after the meal, seized with a sharp catching pain at the pit of the stomach. This had gradually increased and extended over the rest of the abdomen. There was no history of a blow or any other external injury. (*See further, "Medical Post-mortem Records," vol. II, 1877, pp. 437-38.*)

42. Pyloric end of the stomach and duodenum with several chronic ulcers, involving the mucous and submucous coats. They have abrupt, well-defined margins; slightly softened, and sloughy surfaces. In the duodenum there are two ulcers, each rather larger than a split-pea, and numbers of small, superficial, pitted erosions.—From a native female, aged 50, who died from chronic Bright's disease. (*"Medical Post-mortem Records," vol. III, 1880, pp. 409-10.*)

43. The stomach of an East Indian lad, P. J., aged 16, who died from pulmonary phthisis (tubercular), showing numerous irregularly scattered, small, opaque-white granules, and a few superficial ulcers. The former are about the size of sago-grains (or a little larger), of lymphoid structure at the periphery, caseous at the centre, and situated in the submucous tissue. The latter have hard and rounded margins and pitted surfaces. Both are evidently tubercular in character, and have probably originated in the submucous glandular and peptic follicles of the stomach.

44. Pyloric end of the stomach and duodenum. The former exhibits, just above the pyloric ring or orifice, a small ulcer, the size of a two-anna (three-penny) piece, with raised thickened edges.

The latter presents a series of similar but larger ulcerated patches involving the transverse folds of the mucous membrane. All these are tubercular. The rest of the small intestine was thickly covered with very characteristic ulcerations of the same kind.—From a case of tubercular phthisis,—a native female, aged 25. (“*Medical Post-mortem Records*,” vol. II, 1876, pp. 23-24.)

45. Perforation of the stomach following chronic ulceration. From a sepoy named Maddhu. The perforation is about the size of a two-anna (three-penny) piece, and has a very clean-cut, “punched-out” looking margin. The peritoneal coat, for about an inch around the perforation, is puckered, thickened, and opaque-looking. (*Presented by Dr. C. R. Francis.*)

46. “Pylorus, duodenum, and pancreas of a native who died from hæmorrhage caused by a malignant ulcer of the pylorus, opening into the gastro-duodenal artery. The ulcer is about the size of a six-pence, and is situated just within the pylorus. A red glass rod has been passed into the gastro-duodenal artery and out through the ulcer. Beneath the pylorus and in front of the head of the pancreas is an enlarged gland, the size of a grape. It showed nucleated cells under the microscope.” (Colles.)

47. The stomach of a Mahomedan (male) aged about 60, brought to the hospital in a moribund condition with symptoms of intestinal obstruction and peritonitis, and who died, unrelieved, eleven hours after admission.

The stomach is seen to be elongated, somewhat sausage-shaped. At the pyloric ring there is a deep ulcer; about the size of a two-anna piece, and another partially cicatrised ulcer, of the same diameter, near it. The former has perforated all the coats of the viscus, and was the cause of the acute peritonitis from which the patient died.

About six ounces of dark tar-like material (altered blood), was found in the stomach, and some undigested food (potatoes, rice, &c.). Two pints of dark brownish, highly bilious fluid was extravasated in the peritoneal cavity. Around the margins of the perforation, on the outer aspect of the stomach, there was a thin film of recent rosy lymph, which served to glue it partially to the under surface of the liver. No cancerous or any other morbid growth is found developed in connection with the stomach; the pylorus, however, is much narrowed and contracted, barely admitting the passage of the little finger. This is probably attributable to the partial cicatrisation of the ulcers above described, and the consequent puckering and thickening of the surrounding mucous membrane. The muscular coat of the stomach is throughout considerably thickened and hypertrophied.

48. Scirrhus of the pylorus, with great thickening of the walls of the stomach. The pyloric orifice is much narrowed and contracted from the presence of a hard irregular-outlined growth, within and external to the coats of the stomach at this situation.

The section which has been made through this part is quite an inch in diameter. A large projecting mass is also situated just below the pylorus, intimately connected with the thickening of this part, and continuous with it. It has, when incised, an opaque, yellowish-white, fibrous appearance, and very dense resistant consistency, except over a small space where the growth has undergone softening.

Examined microscopically, the structure of the growth is typically scirrhus. Well-formed alveoli, with polymorphous nucleated cells in great numbers are clearly distinguished, and the infiltration involves all the coats of the stomach in and around the pylorus.

The œsophageal opening is normal. The coats of the stomach are throughout much thickened; this condition, however, affecting principally the muscular tissue. The mucous surface is thrown into thick longitudinal rugæ or folds; a deep continuous circle of ragged ulceration affects it just within the pylorus. No history.

49. Scirrhus of the pylorus. The pyloric end of the stomach is seen to be the seat of extensive nodular growth. Projecting from the inner surface is an irregular-outlined tumour, the size of a small orange, encroaching upon, and apparently almost completely obstructing, the pyloric orifice. On the œsophageal side of this growth there is a deeply excavated ulcer, about three inches in diameter, exposing the submucous and muscular coats, and with small nodular excrescences scattered over its surface. Its edges are hard, abrupt, and rugged. The rest of the stomach presents a highly thickened and prominent condition of the mucous and muscular coats. The œsophageal opening is not involved.

The peritoneal surface of the stomach is also throughout thickened, and in parts raised into small, flattened, nodular growths, particularly over the pyloric half.

On making incisions through the thickest part of the pyloric tumour, it is seen to present a coarse, fibrous-looking structure, and all the coats of the stomach appear to be involved in the morbid growth, —the transverse bands of the muscular coat being readily recognisable. The consistency is very firm and resistant, creaking under the knife.

On microscopical examination, the cancerous growth is not found so diffusely disseminated as appears on first sight. The superficial layers of the mucous membrane, and even much of the glandular structures in the submucous tissue, show nothing more than abnormal and excessive hypertrophy. It is in the submucous, muscular, and deeper strata that the differentiation into cancerous structure becomes most marked, and here presents all the characteristics of scirrhus.

The duodenum for its whole length was found united by old peritonitic adhesions to the greater curvature of the stomach,—a portion being still left *in situ*. The mesenteric glands were also firmly fixed to the under surface of the organ, and apparently enlarged and swollen from cancerous infiltration. No history.

50. Carcinoma of the pyloric end of the stomach, involving also, the pancreas. The growth forms a firm, nodulated mass surrounding the pylorus externally, and as ragged nodules, and irregular shaped ulcers, affects the mucous membrane. The pyloric orifice is much encroached upon and narrowed, while the walls of the stomach beyond have undergone compensatory hypertrophy,—particularly as regards the muscular coat. The microscopic structure of the growth is not very distinct, owing to the long maceration of the preparation in spirit; but, as far as can be ascertained by several sections taken from both pylorus and pancreas, is that of scirrhus. (*Presented by Dr. H. L. Lees, Civil Surgeon, Akyab.*)

51. Epithelioma of the stomach. A large fungating growth involves the pyloric half of the stomach, the rest of this organ being contracted, and showing much thickening of its walls, especially of the muscular coat.

The growth commences at the pyloric orifice, which has evidently been greatly constricted, and spreads backwards from this spot for about three inches, implicating chiefly the mucous coat. It stands out prominently and abruptly from the unaffected portion of the stomach, has irregularly-rounded margins, and a broadly villous, lobulated and spongy surface. The average thickness is about half an inch, but, at the pylorus (thickest part), measures quite an inch. The peritoneal coat of the stomach is opaque and thickened. The lymph glands along the lesser curvature are enlarged and infiltrated. The œsophageal opening is normal.

Microscopically examined, the growth is seen to possess all the characters of true glandular epithelioma. The ascini of the peptic and follicular glands of the stomach are found dilated and irregularly expanded, and are filled with large masses of swollen, granular, and fatty epithelial elements. These are of both the spheroidal and columnar type. In all the sections the morbid proliferation is seen to have passed beyond the original or proper glandular structures (matrix) into the surrounding submucous tissue; large numbers of nuclei and small cells are thus found around and beyond the primary seat of the disease, burrowing, and causing its extension into the deeper structures.

52. “A large rent in the stomach, about three inches from the pylorus, apparently the consequence of malignant disease.” (Ewart.)
No history.

In this preparation the stomach has been turned inside out, and, at the pyloric end, a ragged surface of deep ulceration is seen, varying from one to two and a half inches in breadth, and involving almost the whole of the mucous surface. The edges of the ulcer are raised, tuberculated, irregular, very hard and dense. The muscular coat of the stomach is freely exposed, exhibits scattered nodules of morbid growth, and, in two situations, the base of the ulcer presents perforations or ruptures through all the tunics of the organ,—the one being a ragged rent, rather larger in area than a rupee (florin), the other, a rounded perforation, with a smooth margin, capable of admitting a goose-quill. This circle of ulceration is situated, not at the pyloric orifice itself, but at a distance of from one to two and a half inches from it,

encroaching more upon the pylorus at the lesser than at the greater curvature of the stomach. The pyloric orifice is a good deal contracted, and all the coats of the stomach here thickened and infiltrated. The mucous membrane on the œsophageal side of the ulcerated growth is somewhat abnormally thickened for about two inches, beyond which there is no marked change observable. The duodenum (which has also been preserved) is healthy.

Examined microscopically, sections show all the characters of true epithelioma, commencing evidently in the original glandular structures of the mucous and submucous coats, and spreading as an infiltration into the surrounding parts. Large tubular processes or prolongations of epithelial masses are found; the cells are much fused together, of large size, and apparently both of the spheroidal and columnar type,—the latter predominating. They are all in a high state of fatty degeneration.

53. “A lobulated cancerous mass surrounding the cardiac orifice of the stomach, which it constricted so closely that the patient died of inanition. The glass rod now in the cardiac orifice was passed with difficulty; it is about the size of a No. 12 catheter. The right lung contained numerous deposits, varying in size from that of a cherry to that of a cherry-stone. The left lobe of the liver was full of others, as large as split-peas. Patient an Englishman, aged 73.” (Colles.)

The growth has a fungous appearance, consisting of a series of tufted masses, from a quarter to half an inch in length, closely set together, and closely surrounding the cardiac orifice of the stomach. The tissue is soft and succulent. On microscopic examination the structure consists of elongated, papillated outgrowths or tubules, densely packed or filled with cylindrical nucleated epithelial cells and free nuclei, with granular and molecular fat. These are held together by delicate connective tissue, in parts infiltrated with a small nuclear growth, and supporting large blood-vessels. The characters therefore are those of epithelioma of the cylindrical or columnar variety. (*Presented by Professor Chuckerbutty.*)

54. A portion of the stomach of a horse, exhibiting a transverse rupture of all the coats, about $2\frac{1}{2}$ inches in length, situated on the posterior surface of the organ, near the greater curvature. Internally, the mucous membrane all round the rupture appears to be thinned; externally, the peritoneal coat is seen to have given way not only to the extent of the rupture above described, but also for from $2\frac{1}{2}$ to 3 inches on either side of (*i. e.* beyond) it, so that the tear in the serous investment is quite eight inches in length. All round this part soft exudation material can be traced, as if an attempt at repair had already been made.

“The subject showed colicky symptoms, and as usual became easier before death.” (*Presented by R. S. Hart Esq., M.R.C.V.S., Calcutta.*)

55. Portions of the stomach, great omentum, and diaphragm of a horse. Sections prepared from all these parts for the microscope reveal a very extensive infiltration of soft or encephaloid carcinoma, taking a nodulated or tuberculated form. The walls of the stomach are greatly hypertrophied. The great omentum looks just as if small lumps of white wax had been scattered over

its surface. Both stroma and cell-elements are well defined, and in parts also the extension of the latter into the surrounding structures by division and free multiplication of nuclei. (*Presented by R. S. Hart, Esq., M.R.C.V.S., Calcutta.*)

56. A section from the stomach of a horse, from near the greater curvature, showing a nematoid cyst or nest, which was occupied by several filiaræ (*F. Megastoma*). (*Presented by R. S. Hart, Esq., M.R.C.V.S., Calcutta.*)

57. "A portion of the small intestine displaying a rent or rupture an inch long. It runs transversely to the longitudinal axis of the gut; its edges are almost as even as if the opening had been made with a knife. The injury was inflicted by a blow on the abdomen. The patient died of peritonitis forty-eight hours after the accident." (Ewart.)

58. Traumatic rupture of the small intestine (ileum), produced by a blow on the abdomen from a stick. Death from peritonitis took place twenty hours after the receipt of the injury. The rupture is about half an inch in length, in the transverse diameter of the bowel. The mucous membrane is seen protruding. The peritoneal coat is covered with flaky lymph, which material may also be observed feebly matting together the folds of the intestine. Lumps of hard fœces were found in the large gut, which may possibly have predisposed to the causation of the rupture above described.

59. "Three portions of the small intestine of a native boy (Hindu), aged ten years, who fell from the roof of a house, a distance of 20 feet, on to the hard roadway. Was admitted into hospital with a fractured lower jaw, and several of the front teeth driven deeply into the upper jaw. He had been insensible, but, when admitted, was conscious, and complained of intense pain in the abdomen, about the umbilical region, and downwards therefrom. He died ten days after.

"At the *post-mortem* examination we found complete rupture of all the coats of the intestine, with extravasation of its contents, and acute and general peritonitis." (Ewart.)

The rupture is only complete at two points in one of the smaller portions of the ileum. One spot is the size of a four-anna piece (sixpence), the other would admit a crow-quill. In the other smaller bit of intestine there is a large incomplete rupture, the mucous and submucous coats protruding outwards (hernia-like) through the muscular and peritoneal coverings which have given way; and this same condition (incomplete rupture) is observed at two spots in the third coil of intestine preserved. J. F. P. McC.

60. About six inches of the jejunum, showing rupture of the bowel, with eversion of the mucous membrane over a space the size of a four-anna piece (six-pence), the whole being surrounded by much recent lymph.

History.—Dookhan, aged 30, a bearer, whilst engaged with others in carrying up an almirah to the third story of a house, accidentally lost his balance and fell. He was admitted into the Medical

College Hospital on the 24th December 1878, and died on the 26th.

Post mortem examination.—"There were several contusions over the body; the lungs and liver were congested; the heart was healthy; the spleen, kidneys, and stomach were also healthy. This rupture through the coats of the bowel at the lower end of the jejunum was found. Peritoneum throughout highly inflamed. The outer surfaces of the intestine were matted together by bands of lymph. There was a small quantity of fœcal matter in the abdominal cavity. Death evidently due to peritonitis." (*Presented by Dr. S. C. Mackenzie, Police Surgeon.*)

61. A portion of the jejunum (from about its middle third) exhibiting a rupture sufficiently large to admit a crow-quill. The mucous membrane is partially everted through this opening, and, around its margins, lymph is seen to be deposited. This served to glue the injured bowel to a neighbouring coil, but did not prevent fœcal extravasation and consequent acute peritonitis, from which the patient, a native (male), aged 30, died, 52 hours after the receipt of the injury.

The deceased was employed as a coolie on the Suburban Railway, and, during the process of shunting some empty trucks, got jammed between two of them. (*Presented by Dr. S. C. Mackenzie, Police Surgeon.*)

62. A portion of the small intestine, and the sigmoid flexure and rectum of Miskun Sowar, 1st Troop, 19th Bengal Lancers, aged 17, who died at Lucknow from the effects of a bamboo-stick being thrust into the rectum. "The morbid specimen shows the wound of the rectum, remains of effused blood on the sigmoid flexure, and several holes or wounds of the small intestine produced by the pointed end of the bamboo after it had pierced the rectum, striking the small intestine where it rested on the spine and prominence of the sacrum." The patient died from peritonitis, but survived these very severe injuries for no less than 29 days. "The deceased was a Pathan, and is supposed to have been in the habit of submitting to the practice of sodomy with one of the (three) men concerned in the outrage, and the latter had become enraged against him by his having conferred his favour on another man. All the three men concerned in the outrage were Pathans, and were under the influence of *churrus* at the time the deed was done." (*Presented by Surgeon-Major G. A. Watson, 19th Bengal Lancers, Lucknow.*) See also *Indian Medical Gazette*, vol. IX, 1874, p. 67.

63. Duodenitis. A portion of the duodenum from a case of abortion, suspected to have been induced by the administration of some irritant drug or poison, though none was discovered either during life or *post mortem*. The specimen shows a very peculiar roughened condition of the mucous membrane, as if the epithelial layer had been scraped away. Brunner's glands are also enlarged and prominent. This appearance of the mucous surface was also observed in the stomach and throughout the small intestine,

but was most marked in the duodenum. There was, in addition, intense vascularity and even ecchymosis of the affected parts. (*Presented by Dr Chuckerbutty.*)

64. The duodenum from a case of arsenical poisoning,—a native female, aged about 20. There is intense congestion, vascularity, and pulpy softening of the mucous membrane, and several smaller and larger masses of yellow arsenic are seen impacted between the valvulæ conniventes.
65. Duodenitis. A portion of the duodenum, the mucous membrane of which is much thickened and shows superficial excoriation of the epithelial layer. No history.
66. Amyloid infiltration of the intestine. The lower portion of the ileum of a female patient, aged 35, who died from chronic dysentery, showing a catarrhal condition of the mucous membrane, which also, in the situation particularly of the glandular structures (Peyer's patches and solitary follicles), gave a distinct reddish-brown reaction with iodine solution (amyloid or albuminoid degeneration). The kidneys were similarly affected.
67. A portion of the ileum, preserved on account of the remarkably characteristic reaction of amyloid or albuminoid infiltration obtained with solution of iodine over the entire mucous membrane, more distinct in some parts than in others, and especially marked in the zone of vessels surrounding the patches of Peyer and solitary glands.

Similar changes were met with in the liver, spleen, and kidneys.—From an East Indian (male), who died of chronic dysentery, and had also commencing pulmonary phthisis.

68. Amyloid or albuminoid infiltration of the mucous membrane of the small intestine (ileum). There is no marked alteration in the structure of the coats of the bowel, but, in the fresh state, a very distinct and characteristic reaction was obtained with iodine solution, in the form of reddish-brown streaks and ramiform configurations, particularly in connection with the patches of Peyer, indicative of the altered condition of the walls of the small mesenteric arteries here distributed. Similar (amyloid) changes were met with in the spleen and kidneys.—From a native (male) patient, aged 30, admitted into hospital very low, anæmic, and with general anasæra. The urine contained albumen. There was fever and bronchitis; the latter passed into pneumonia, from which he died on the eleventh day.
69. The lower end of the ileum showing considerable prominence and enlargement of the patches of Peyer and solitary glands. From a case of cholera. The specimen illustrates one of the most frequent *post mortem* appearances met with in connection with the bowel in malignant cholera.
70. The last twelve inches of the ileum, with the cæcum, from a patient, a Hindu, aged 40, who died in the collapse stage of cholera. The mucous surface of the bowel shows great prominence and infarction of the solitary glands and patches of Peyer,

- with superficial pitting of the follicles in some parts. The changes are similar, though not so pronounced, in the large gut.
- The production of this condition may probably be attributed to the increased activity of all the glandular structures of the intestine, and the shrinking, from loss of moisture, of the surrounding parts—the other tissues of the bowel. (*See also prep. No. 1.*)
71. The lower portion of the ileum, the cœcum, and ascending colon, exhibiting enlarged solitary follicles and Peyer's patches; several of the latter present slightly pitted surfaces. In the large intestine the solitary glands are similarly swollen and prominent. From an East Indian boy, aged seven, who died from cholera. (*See also prep. No. 4.*)
72. A portion of the ileum with the cœcum of a native child, aged two years, who died (collapsed) from cholera. Prominence and enlargement of all the solitary glands and patches of Peyer are well seen, the morbid condition being more than usually exaggerated, probably on account of the normal excessive activity and development of these structures at this early period of life. The mesenteric glands—preserved with the specimen—are also enlarged, and were slightly hyperæmic.
73. The intestine in cholera. The last two feet of the ileum and the cœcum are preserved. There is great enlargement, opacity, and prominence of the glandular structures, particularly of the solitary follicles in the small intestine. The intervening mucous membrane is soft and pulpy, in several places shows bare patches from extensive shredding of epithelium.
- From a European seaman, aged 26, who died in hospital in the "collapse stage" of cholera five and a half hours after admission. (*See also prep. No. 6.*)
74. Simple ulceration of the jejunum, from "a case of continued fever. The valvulæ conniventes were tinged and swollen, and the mucous membrane is ulcerated in several places." (Ewart.)
75. Chronic follicular ulceration of the small intestine. A portion of the jejunum and ileum were only affected, and have been preserved. The ulcers in both situations are similar. They are broad, stretch right across the bowel, have ragged and thinned edges, and slightly roughened or irregularly thickened bases. There is no induration or caseation as in tubercular ulcers. In the upper part of the ileum one ulcer has penetrated as deeply as the peritoneal coat, which, in turn, has given way, and a perforation, about the size of a crow-quill, has taken place. The edges of the perforation are thin and sharply defined. Acute general peritonitis resulted, from which the patient died.
- During life the intestinal lesion was unsuspected. The patient, a European (male), aged 25, was admitted suffering from both external and internal hæmorrhoids. He was operated upon for the former, and had apparently recovered. He was constipated and dyspeptic while under observation, and occasionally referred to a pain at the epigastrium, but not at any other part of the abdomen. No acute symptoms whatever were present during life until the fatal peritonitis supervened.

76. A portion of the jejunum with large, transversely-placed, indolent-looking ulcers, apparently chronic in character, and partially cicatrised. From an East Indian female. The ulcers stretch right across the gut, and are from one to two inches in length. Their margins are somewhat abrupt; their bases irregularly thickened, but not from any tubercular deposit. (Chronic follicular enteritis.)
 77. About the lower eight inches of the ileum showing well-marked tubercular ulceration of two patches of Peyer. The upper one is seen to lie transversely, and to involve about three-fourths of the circumference of the gut; the lower ulcer stretches completely across it. Both exhibit characteristic thickening of margins, mammillation of bases, and subperitoneal tubercular deposit. (No. 397, Ewart's Catalogue, entered as "Typhoid.")
 78. A beautiful example of tubercular ulceration of the intestine. The disease involves the lower half of the ileum, and extends beyond the ileo-cæcal valve into the cæcum. The glandular structures (solitary follicles and patches of Peyer) are seen in various stages of infarction and ulceration. The ulcers are irregularly rounded or oval; their margins thickened and raised; their bases rough and mammillated at the lower end, thin and smooth at the upper portion of the intestine preserved; and, here also, the coats of the bowel generally are very thin and semi-transparent. The ileo-cæcal valve has been almost completely destroyed.
 79. About two feet of the lower end of the ileum showing very characteristic tubercular ulceration of the glandular structures. The ulcers are placed transversely, and stretch right across the gut. They have raised, thickened, infiltrated margins, and pitted surfaces, with irregularly distributed yellowish-white nodules. The peritoneal coat is thickened and raised by similar opaque-white granules.
- All the mesenteric glands are cheesy; several enlarged to the size of a pigeon's egg.
80. The cæcum and ileum of an East Indian (male) patient, who died from tuberculosis (phthisis and tubercular enteritis). The whole of the mucous membrane is studded with large, more or less rounded or circular ulcers, having thickened raised edges, and granular, nodulated bases,—both being infiltrated with tubercle. Fine, granular, yellowish-white deposit of the same material is seen immediately beneath the peritoneal coat opposite each ulcer. The size of these ulcers varies from a crown-piece to a split-pea. A large irregular patch occupies the ileac side of the ileo-cæcal valve, which has thus been destroyed considerably, and the remaining portion of its structure is rough, thickened, and infiltrated. The disease is seen to have extended into the large intestine. Scattered ulcers of various sizes were found in several portions of the colon. But in the cæcum it is most advanced, eleven deep ulcers being found in the mucous membrane of this part, each of them typically tubercular.

81. A portion of the small intestine (ileum) exhibiting several large tubercular ulcers, placed transversely, and embracing the whole diameter of the bowel. Their margins are raised, hard, and irregular; their surfaces markedly mammillated. There is also much tubercular infiltration of the peritoneal coat.—From a native female, who died in hospital.
82. A portion of the ileum preserved to show the appearance presented by *cicatrising* and *cicatrised* tubercular ulcers, with the consequent star-shaped puckering of the surrounding mucous membrane and narrowing of the calibre of the gut. The extreme thinness of the intestine—the wasting that has affected all its coats—is also well seen.—From a Hindu female, aged 45, who died from pulmonary phthisis.
83. The upper third of the ileum from an East Indian male, aged 22, who died from pulmonary phthisis, showing cicatrising tubercular ulcers, with characteristic puckering and contraction of the bowel.
84. A portion of the ileum with numerous partially or completely healed ulcers, which for the most part extend transversely across the gut, have raised, thickened margins, and puckered, cicatrised surfaces,—evidently old tubercular ulceration. The great majority were found quite free from any recent vascularity.—From a native (Bengali) female, aged 37, who died from pneumonia. (“Medical *Post-mortem* Records,” vol. III, 1880, pp. 745-46.)
85. Tubercular ulceration of the *large* intestine. The preparation exhibits the sigmoid flexure and rectum, with numerous rounded or irregular-outlined ulcers, which have remarkably hard, raised, and thickened margins, especially in the rectum, and are evidently tubercular in character.

The whole of the small intestine was similarly affected, including the duodenum, and also, the pyloric end of the stomach. (*See* prep. No. 44.)—From a case of tubercular phthisis, a native female, aged 25.

86. Tubercular ulceration of the *large* intestine. The cœcum, appendix cœci, and a portion of the colon of an East Indian (male), D. D’Rozario, aged 45, who died from pulmonary phthisis. The appendix vermiformis shows much thickening of its walls, and a bulbous dilatation of its free extremity. Its inner surface is deeply ulcerated. Scattered ulcers exist in the cœcum and ascending colon. These have irregular, hardened, prominent margins; their bases are mammillated, and expose the muscular coat. All are evidently truly tubercular in character.

The specimen is chiefly preserved to illustrate the fact that, occasionally, tubercular lesions are developed in the large intestine as characteristically as they generally are in the small. The small intestine in this case was, curiously enough, not affected. There was a little recent catarrhal dysentery of the rectum, but the ulcers above described are not dysenteric.

87. The lower two feet of the ileum, with the cœcum and the mesenteric glands from a case of typhoid or enteric fever.

The patches of Peyer and the solitary glands in the whole of the portion of the ileum preserved show various stages of progressive ulceration. Some are swollen and infarcted, with tumefied, fungous-looking edges, others exhibit sloughs forming and still adherent, or about to separate, and others, again, well-established ulceration; in all, strictly confined to the glandular structures, and placed thus opposite to the attachment of the mesentery. The ulcers increase in size and perfection as the ileo-cæcal valve is approached, just above which two very large and characteristic ulcers are situated. The mesenteric glands are enlarged and swollen. No history.

88. A portion of the ileum showing very typical typhoid ulceration of the mucous membrane. The largest ulcers are oval in shape, from half an inch to an inch and a half in length, and involve the whole of a Peyer's patch. There are also numerous smaller ones, which evidently correspond to the solitary glands; and many of the latter are seen in the earlier condition of tumefaction or infarction. All the ulcers above described have common characteristics. They stand out prominently from the surrounding mucous membrane. Their margins are abrupt, and strictly limited to the solitary or agminate (glandular) structures affected. Their surfaces present a peculiar pitted or reticulated appearance, from more or less uniform rupture of the infarcted follicles, and thus illustrate one of the modes of complete formation of ulcer in typhoid fever, apart from sloughing (*en masse*). At the *post mortem* examination it was noted that "the corresponding mesenteric glands were also enlarged." (*Presented by Dr. Scriven.*)

89. The lower third of the ileum, the cæcum, and the ascending colon. This preparation exhibits most typically the characters of true typhoid lesions of the bowels. Throughout the portion of ileum preserved, the glandular structures (patches of Peyer and solitary follicles) are seen tumefied, swollen, and prominent,—many ulcerated. The last, chiefly near the ileo-cæcal valve, which itself shares in the morbid process, and, immediately above it, may be observed three large "patches" which have almost coalesced, and present thus a broad and deeply-excavated surface, nearly four inches in extent. In the upper part of the ileum the glandular structures are only superficially ulcerated, their surfaces pitted, and the sloughs still adherent.

The portion of the cæcum and ascending colon preserved exhibit similar changes in the solitary follicles, indicating, therefore, an extension of the disease beyond the ileo-cæcal valve, but affecting in the large as in the small intestine, principally, and almost exclusively, the glandular structures, not the general mucous surface. (*Presented by Dr. Scriven.*)

90. The cæcum and about six inches of the ileum, showing, in the latter, the changes in the glandular structures characteristic of typhoid or enteric fever. The cæcum is healthy. The ileo-cæcal valve much ulcerated on its ileac surface. Just above it is a large, deeply-ulcerated Peyer's patch, and higher up

two plaques with swollen, infarcted margins, and irregularly pitted surfaces; while the solitary follicles scattered over the rest of the mucous membrane present a prominent and raised condition also. Such of the mesenteric glands in the neighbourhood of the ileo-cæcal boundary as have been preserved exhibit an enlarged and softened condition. No history.

91. Cæcum, with a portion of the ileum, showing infarction and typhoid ulceration of the patches of Peyer in the latter.—From a European seaman, Henry Moore, admitted into hospital on the 14th and died on the 25th December 1864. (*Presented by Professor Norman Chevers.*)
92. The lower portion of the ileum and the cæcum of a sepoy, “who died of typhoid fever in the regimental hospital, on the night of the 11th June 1872, *i.e.*, on the 12th day, the fever having begun on the 31st May.” Three large ulcers are seen situated just above the ileo-cæcal valve. A fourth, about four inches above the valve. The larger ulcers are deep, exposing the muscular coat, their edges are a little thickened and raised, but undermined, and they occupy the positions, and partake more or less of the outlines or areas of the patches of Peyer. (*Presented by Dr. R. T. Lyons, 8th N. I., Alipore.*)
93. A portion of the intestine, consisting of about a span above and below the ileo-cæcal valve,—showing typhoid lesions. The patches of Peyer and solitary glands are much enlarged, forming rounded or oval prominent infarctions or plaques; others are distinctly ulcerated. A large “patch,” immediately above the ileo-cæcal valve, is seen to have sloughed almost *en masse*; one or two fragments of slough still adhere to the margins, but the main bulk of the gland has exfoliated, exposing freely the muscular coat. Above this ulcer are two other patches of Peyer which exhibit partial tumefaction and commencing slough. They are raised from the surrounding surface in button-like projections, each about the size of a two-anna (three-penny) piece. Their edges rounded; their surfaces pitted. Higher up, other small circumscribed portions of Peyer’s patches and a few solitary glands show tumefaction, and, in the recent state, were highly vascular. The ileo-cæcal valve is considerably thickened. In the cæcum, the solitary follicles exhibit, in several places, a raised, prominent and infarcted condition, a few being also pitted on the surface. These lesions were absolutely confined to the portion of intestine preserved.—From a Hindu (male), aged 21, admitted into hospital on the 14th June 1873. It was said by his friends to be the 5th day of the fever. He died on the 16th June, two days after.

On admission, the patient was delirious. The tongue and teeth covered with sordes. There was subsultus tendinum and diarrhoea. Pain over the whole abdomen, but especially elicited on pressure over the right iliac fossa. “The highest temperature was 105°F (on the evening of admission), the lowest 101°·2F. (shortly before death). He was never free from delirium while in hospital.”

The mesenteric glands were enlarged and highly vascular, (*see* prep. No. 241.) (*Presented by* Professor Chuckerbutty.)

94. A portion of the ileum and the cœcum of a European (male), aged 30, admitted into the hospital under the care of Professor Cutcliffe, with popliteal aneurism, which was treated by compression and cured; but while still under observation (in hospital), the patient developed symptoms of typhoid fever, of which he died. The mucous membrane of the whole of the ileum was found, *post mortem*, of a rosy-pink colour, and for 36 inches above the ileo-cœcal valve exhibited a morbid condition of the glandular structures. The valve itself is thickened, and on both its surfaces three or four small ulcers are seen, with shreddy sloughs adhering to them. Two inches above the valve, (in the ileum), is a large irregular-outlined ulcer, occupying a Peyer's patch. The portion of the same patch which is not ulcerated is soft, spongy-looking, raised for about $\frac{1}{8}$ of an inch above the surrounding mucous surface. The base of the ulcer is formed partly by the muscular coat of the bowel, partly by the peritoneal coat alone, which, at one spot, is as thin as a wafer, and quite diaphenous; moreover, perforation seems to have been imminent here, since the external aspect of the gut showed, (in the fresh state), not only great vascularity of the peritoneum, but also, a circumscribed exudation of recent lymph corresponding to the situation of the progressing ulcer. Two small ulcers, each about the size of a pea, lie about half an inch below the last described. They also occupy portions of tumefied, vascular, and prominent Peyer's patches, and expose the muscular coat. Twelve inches above the ileo-cœcal valve is another ulcer, the size of a four-anna piece (six-pence), circular in shape, and also reaching the muscular coat; and a fifth ulcer, of almost identical shape and size, is situated three inches above the last. In and between these ulcers, and extending upwards in the ileum for the distance already indicated, are numerous swollen, raised, and prominent patches and solitary glands. In the majority of instances only portions of a patch, not its whole extent, are implicated, and, at the centres of several of these tumefactions, small pitted depressions (indicative of commencing ulceration) are also observed.

The whole of the mucous surface of the large intestine was abnormally vascular, and covered with numerous small, circumscribed, more or less rounded or circular ulcers, having the closest resemblance to those affecting the solitary follicles in the small intestine, and evidently originating and confined here, in the large gut, to the homologous glandular structures.

95. A portion of the ileum with the cœcum of a native child, who died from typhoid (enteric) fever. The patches of Peyer and solitary follicles throughout the lower half of the ileum are enlarged and prominent, and the great majority of them ulcerated. The ulcers increase in size and number as the ileo-cœcal valve is approached. In the last thirty inches of the ileum they are extremely well marked. They are rounded or

oval, as on the one hand the solitary follicles, or, on the other, the patches of Peyer, are involved. Almost every patch in this portion is in a state of acute slough. The largest of these measures quite two inches in length by an inch in breadth, is situated about six inches above the ileo-cæcal valve; another, an inch in length by an inch and a half in breadth, about two and a half inches above the valve; another ($1\frac{1}{2}'' \times \frac{1}{2}''$), just above the valve; and a fourth, the size of a rupee, close to it, implicating also the ileac surface of the valve. All these ulcers, and especially the largest, penetrate deeply, reaching even the peritoneal coat, which is extremely thinned. Each large ulcer was surrounded by a distinct hyperæmic zone of dilated and congested capillary vessels. The mucous membrane of the large intestine is pale, and the glandular structures unaffected. The mesenteric glands were enlarged and hyperæmic. (*See* prep. No. 242).

History.—Gopal, a Hindu boy, aged 8 years, was admitted into the College Hospital, under the care of Dr. Chuckerbutty, on the 30th December 1874. His mother stated that about twenty-five days ago the child was attacked with a continued fever, which lasted fourteen days. There was then no fever for four days, when it returned, and has continued to the present time. For the last two days the child has been delirious. There has been no diarrhœa. Condition on admission was as follows:—Body much emaciated; dark sordes on the teeth and gums; tongue dry and fissured; pulse small and feeble, 112 per minute; much subsultus tendinum; abdomen flat; considerable pain on pressure over the cæcum and near the umbilicus. Patient delirious. He died exhausted on the afternoon of the 6th January 1875, becoming quite comatose shortly before death.

The daily record of temperature is appended—

30th December	...	...	M.		E.	103 6F.
31st	„	...	„	100° F.	„	100°0 „
1st January	...	...	„	101° „	„	102°0 „
2nd	„	...	„	100° „	„	103°0 „
3rd	„	...	„	100°2 „	„	101°0 „
4th	„	...	„	101° „	„	102°2 „
5th	„	...	„	101°1 „	„	100°6 „
6th	„	...	„	100°4 „	„	99°6 „

96. A very typical specimen of typhoid lesions of the small intestine, from a Goorkha sepoy (Kurbcer), aged 22, in the 43rd Assam Light Infantry, who died on the 25th November 1873, on the 12th day of the disease. “The man was previously weakly from congestion of the spleen and anæmia. The spleen weighed 35 ounces. He died of exhaustion; delirious, &c.” Almost all the patches of Peyer and the solitary glands in the portion of intestine (lower third of the ileum) preserved are tumefied, swollen, raised into larger and smaller, rounded or oval “plaques,” the majority of which show either partial or more extensive sloughing, and the formation of very characteristic ulcers. These changes are most marked in the last six inches of the ileum. The glandular patches immediately above the ileo-cæcal valve have sloughed almost *en masse*. (*See* further, “Notes on Enteric Fever” by Dr. J. O’Brien, *Indian Medical Gazette*, March 1876,

p. 62.) (*Presented by* Dr. J. O'Brien, 43rd Assam Light Infantry, Gowhatty, Assam.)

97. Another specimen of typhoid ulceration of the small intestine "from a native recruit (Jerwah), aged 22, who died on the 14th day of the disease, of exhaustion, &c., (November 1873)." The glandular structures, particularly the patches of Peyer, show very characteristic fungoid prominence and infarction, and the majority are more or less ulcerated, or covered with yellowish shreddy sloughs. For about three inches above the ileo-cæcal valve the ulceration is more general, involving the entire mucous surface for a space as large as the palm of the hand. (*See Indian Medical Gazette, loc. cit.*) (*Presented by* Dr. J. O'Brien, 43rd Assam Light Infantry, Gowhatty, Assam.)

98. The cæcum and about three feet of the ileum showing enormous fungoid prominence, vascularity, and infarction of the patches of Peyer and solitary glands, with also superficial sloughing of portions of the former. The morbid changes become more marked as the ileo-cæcal valve is approached, the ileae side of which presents an almost continuous mass of highly vascular, coalesced, patches of Peyer, with here and there slight ulceration, and small, still adherent, yellowish sloughs. The general mucous membrane of this portion of the bowel had a bright rosy-pink colour, and the mesenteric vessels and peritoneum immediately over each patch were highly injected and of a dark purplish tinge.

The mesenteric glands were enlarged and intensely vascular and soft; some swollen to the size of a sparrow's egg, particularly those nearest the ileo-cæcal valve. The spleen was large, heavy, and dark.—From an Armenian boy, aged 7 years, admitted into hospital on the 4th July 1875, and who died the next day. No clear history of the attack could be obtained, except that the child had been suffering from fever for about eight or nine days. It was at first intermittent, had, however, for the last five days become continued in character. The condition of the bowel points unequivocally to true typhoid or enteric fever. (*See further, "Medical Post-mortem Records," vol. I, 1875, pp. 713-14.*)

99. The last two feet of the ileum showing ulceration of the glandular structures and perforation of the bowel. At the *post mortem* examination the ileum presented a bright pink colour, and was preternaturally vascular in its last thirty inches. In this portion of the gut about a dozen large and several smaller ulcers were found. These involve (as may be seen in the preparation,) the glandular structures, both solitary follicles and patches of Peyer. They are sharply defined, have thin margins and vascular bases formed by the submucous, muscular or peritoneal coat; are almost all bare, but a few have still small fragments of yellowish slough adhering to them. They are rounded, oval or irregular in shape, and are especially numerous in the last fifteen inches of the ileum. The perforation alluded to has taken place at the centre of one such ulcerated patch. It is sufficiently large to admit the point of a director, and is situated about

eight inches above the ileo-cæcal valve. Fœcal extravasation with acute general peritonitis was the fatal result. The mesenteric glands, enlarged, soft, swollen, and vascular, are preserved with the bowel. Taken from a native (male) child, aged about two and a half years, who had been suffering from fever for about twenty days, was admitted into hospital in a very low and almost insensible condition, and died within twenty-four hours, with symptoms of acute peritonitis (22nd July 1875).

100. About the lower three feet of the ileum and the cæcum showing great swelling, tumefaction, and commencing ulceration of the glandular structures,—solitary follicles and patches of Peyer in the former, and solitary glands in the latter,—lesions characteristic of typhoid or enteric fever. The mesenteric glands are also preserved. They are enlarged, swollen, and highly vascular.

The subject was a native male (Hindu), aged 34, who was brought to the hospital in a moribund condition, and died within an hour after admission. His friends stated that he had been suffering from continued fever for six days, during the greater part of which he had been delirious and unable to partake of any kind of nourishment. (For further description, see “Medical Post-mortem Records,” vol. II, 1877, pp. 413-14.)

101. Typhoid ulceration of the intestine. From a European boy, aged 12 years. He was admitted on the 15th February 1878 for chronic ulceration of the corneæ, and developed the fever while in hospital, on or about the 15th April (1878). Was transferred to the medical wards on the 17th April, and died on the 20th April—*i.e.*, on about the sixth or seventh day of the disease. The cæcum and about five feet of the ileum are preserved. In the latter the patches of Peyer and solitary glands are all much enlarged, prominent, and infarcted; form very characteristic fungoid-looking projections from the surrounding mucous surface. Some present also a superficially pitted or ulcerated condition. The largest patch, situated a little above the ileo-cæcal valve, is quite four inches in length and an inch and a half in breadth. There was slight prominence and infarction of the solitary glands in the cæcum and ascending colon. The mesenteric glands were swollen and vascular. The spleen large, dark, and soft,—weighed 9½ oz.

No eruption on the skin was discovered at any time in this case, though carefully looked for. There was distinct pain on pressure over the right iliac fossa, but no gurgling. The stools were highly bilious and offensive, passed very frequently, and often involuntarily. The temperature was throughout high (*see below*). On the 19th the patient was delirious, and on the afternoon of the 20th April, when the temperature reached 107°F., he became livid and insensible.

Temperature Table.

3rd day	... 17th April	...	M.	...	E.	104°F.
4th "	... 18th "	...	"	104°2	"	104°2,,
5th "	... 19th "	...	"	104°	"	104°8,,
6th "	... 20th "	...	"	103°8	"	107° "

falling to 101°6F. shortly before death.

He was at first treated by quinine and digitatis given internally; afterwards,—as the high temperature persisted,—by cold baths, ice to the head, and hypodermic injections of neutral quinine.

(See further, "Medical *Post-mortem* Records," vol. II, 1868, pp. 769-70.)

102. A similar specimen from a native (Hindu) female, aged 15.

There is prominence and infarction of the patches of Peyer, and superficial pitting (ulceration) of those nearest the ileo-cæcal valve. The mesenteric glands were enlarged, dark, and soft. The spleen increased to about twice its normal size, very vascular and pulpy.

The patient was admitted into hospital on the 1st February 1879, with a history of having suffered from fever for a fortnight prior to admission. The temperature that evening was 101°F; the next morning 103°F; the bowels loose during the night. Evening temperature 103°F. 3rd February.—Morning temperature 101°F. Four liquid, thin stools during the night. Evening temperature 104°F. Subsultus tendinum and delirium. During the night the evacuations were frequent and involuntary, the breathing became hurried, and she died at 2 A.M. on the 4th February. No eruption was observed on the body either during life or at the *post mortem* examination.

103. The lower end of the ileum exhibiting a cicatricial condition of the mucous membrane, probably from bygone typhoid or enteric fever. The cicatrices are situated opposite the attachment of the mesentery, and in the position occupied normally by the patches of Peyer, which structures, however, are seen to have almost completely disappeared. The cicatrices are "starred" and thin, exhibit no morbid deposit or infiltration, and produce very little, if any, puckering and contraction of the bowel. The general mucous membrane of the latter is thinned, and all its coats are atrophied.

The specimen was taken from a case of hæmorrhagic apoplexy, a Hindu (male), aged 57. The attack was sudden, and the patient died (hemiplegic and insensible) seventeen days after. No history was recorded of his having suffered from bowel disease.

104. The lower third of the ileum and a portion of the large intestine. Throughout the ileum all the patches of Peyer, and numbers of the solitary follicles, are seen distinctly raised and prominent. The surfaces of the patches are in parts soft, pulpy, highly vascular (in the recent state), but unbroken; in others, irregular ulcers, varying in size, appear upon these surfaces; and in others, again, the whole of a patch has sloughed or exfoliated, leaving only a thin stratum of the transverse muscular coat and peritoneum at its base. The ulceration becomes more and more marked as the ileo-cæcal valve is approached. The greater portion of this valve, especially its ileac half, and the mucous membrane for about two inches above it, are extensively ulcerated, and present an irregular deeply eroded appearance.

The destructive process throughout is more or less specially confined to the patches of Peyer. The outlines of the ulcers, and their long diameters running in the longitudinal axis of the gut, render this very evident.

In the large intestine the solitary glands are diffusely affected. They are raised, prominent, tumefied, and vascular; each about the size of a split-pea. Some are entire, but the majority appear to have undergone ulceration. The ulcers are small, oval or rounded, and mostly superficial.

Both the tumefied and ulcerated patches in the ileum were, in the recent state, surrounded by bright vascular zones of congested blood vessels, and the general surface of the mucous membrane was abnormally vascular. In the large intestine there was slight vascularity of the mucous surface immediately around the small ulcers, &c., above described, but the rest of the bowel was pale.

The spleen was large, dark, and soft. The liver also soft, bile-stained, of a pale, chrome-yellow colour. The mesenteric glands were enlarged, tumefied and hyperæmic, (*see* prep. No. 240). The patient, a Bengali (Hindu) female, aged 22, was admitted into the hospital on the 3rd June 1873, with marked symptoms of typhoid or enteric fever. It was said to be the ninth day of the fever. Her condition on admission was as follows: "She was delirious; there was subsultus tendinum; the pupils widely dilated, and the conjunctivæ jaundiced. Lips and teeth covered with sordes. Tongue dry. The bowels on admission were constipated, but the next day, and subsequently, she had constant and obstinate diarrhœa. The abdomen was tympanitic; much pain on pressure, particularly over the right iliac fossa. Urine passed freely until the twelfth day of the disease, when a catheter had to be used. The urine thus removed was slightly acid and albuminous. She sank into a deep collapse, and died on the fourteenth day. The highest temperature was 105°F. on the evening of the (alleged) tenth day, and the lowest 95°F. on the fourteenth day."

The specimen is chiefly interesting as illustrative of the occasional extension or occurrence of lesions in the large intestine in typhoid or enteric fever, which are quite as characteristic and distinctive as those usually limited to the smaller bowel.

105. Typhoid ulceration of the *large* intestine. The preparation consists of the ascending colon of a European soldier (Private W. West, aged 27, H. M.'s 2-2nd Regiment, stationed at Barcilly), exhibiting a series of small, round or oval ulcers, varying in size from a split-pea to a two-anna (three-penny) piece. They have rather sharply defined margins, overlapping slightly the sub-mucous coat, while their bases are formed, in the majority, by the muscular, and in a few, by the peritoneal coat only. They are irregularly distributed, and not by any means confined to the transverse folds of the bowel. The general mucous membrane presented in the fresh state a highly congested purplish condition.

The patient was admitted into hospital on the 14th May 1878, during an epidemic of typhoid or enteric fever (in the regiment), and died on the 9th June. There was a high range of temperature throughout, and very severe diarrhœa, the latter persisting to the end, and becoming at last involuntary. The stools are described as "pea-soupy" and "characteristic."

After death, the duodenum and jejunum presented nothing remarkable. The whole of the ileum, and chiefly its lower half, was in a state of intense congestion, of a bright purple colour. There was no prominence or ulceration of the glandular structures, but there were a few small, superficial, recent-looking ulcers on the ileo-cæcal valve.

(See further, *Indian Medical Gazette*, vol. XIII, 1878, p. 306.)
(Presented by Assistant Apothecary J. R. Massey, H. M.'s 2-2nd
Queens, Bareilly.)

106. A preparation illustrating the early stage of infarction of the solitary glands in dysentery. The portion of bowel preserved is the sigmoid flexure of the colon.—From a native boy, aged 14 years. There is great prominence and enlargement of the solitary follicles, which are distended with a clear jelly-like secretion.

Sections made through the swollen glands exhibit, under the microscope, a highly mucoid fluid, faintly granular throughout, in which are suspended numerous nuclei, a few blood-cells, and numbers of round, granular cells (exudation corpuscles), with delicate filaments of fibrin. {The columnar epithelium normally covering the mucous surface of these glands seems to be almost entirely detached, or, at any rate, so loosened, that when sections are made the cells fall away from the basement membrane, and are only found in groups of three or four around the margins of the section. The submucous capillaries are greatly enlarged, varicose, and congested.

107. The descending colon, sigmoid flexure, and rectum of a Mahomedan boy, aged 12 years, who died from acute catarrhal dysentery. The condition of the bowel is extremely characteristic of the early stage of the disease. The mucous membrane is rough-looking from much desquamation of epithelium, and, in parts, superficially eroded and ulcerated; while the glandular structures (solitary follicles) are much enlarged, swollen and prominent. They project from the surface, and are filled with opaque mucoid secretion. The latter may also be observed to exude in small flocculent masses from such of the follicles as have partially or completely ruptured. All the coats of the bowel are abnormally thickened, and, in the recent state, were abnormally vascular and congested,—particularly the mucous and submucous tissues.

108. "Colon of a native, aged thirty-five, who died from subacute dysentery on the sixth day. The gut is inverted. There are numerous ulcers of various sizes and shapes seen along the whole extent of the canal. None of the sloughs have been thrown off. There is a fleecy appearance about the mucous membrane from the exudation material." (Ewart.) (*Presented by Dr. J. Long of Secbsagur.*)

109. "Large intestine of a native male patient who died of ecchymotic dysentery, showing the mucous membrane thickly covered with ulcers, each surrounded by an ecchymosed ring." (Colles.) A good specimen of acute catarrhal dysentery. The ulcers are small but very numerous. Several are deep enough to expose the muscular coat; the majority, however, only reach into the submucous tissue. (*Presented by Professor Chuckerbutty.*)

110. The whole of the large intestine of a native boy, aged seven years, who was admitted into hospital in a moribund condition, suffering from acute dysentery.

The mucous membrane of the whole of the gut is thickened, brightly injected (in fresh state), and covered with innumerable recent ulcers. Those in the cœcum, ascending and transverse colon are

more or less distinctly rounded, their bases covered with soft yellowish sloughs, their margins raised and swollen. Where sloughs have separated, the muscular coat is freely exposed. In the descending colon, sigmoid flexure and rectum, the ulcers are larger, more irregular in shape, form an almost continuous series in the last six inches of the bowel, and the muscular coat is not only laid bare, but itself is the seat of secondary ulceration and softening. In the lowest part of the rectum some yellowish, granular inflammatory effusion (lymph) covered the ulcerated surfaces. (*See further, "Medical Post-mortem Records,"* vol. I, 1874, pp. 337-38.)

111. "Large intestine of Gobindo, aged 50, admitted with dysentery of twenty days' standing. He passed several sloughs, but was getting on well when, owing to an error in diet, the disease relapsed, and the patient died of bronchitis and pneumonia.

The intestine is full of ulcers, some of which have almost healed; others are clean, but devoid of granulations. At the lower end of the gut are several granulating ulcers." (Colles.)

This specimen affords a good illustration of the manner in which repair is effected after acute dysentery. J. F. P. McC.

112. Acute dysentery. "An ulcerated cœcum. By far the greater part of the mucous membrane has been destroyed. In some places the disintegration has advanced down to the peritoneum which forms the floor of the ulcers; in others, it has only proceeded down to the muscular coat, which is enormously thickened from implication in inflammatory disease. In the vicinity of the appendix vermiformis, the intestinal wall is almost half an inch in thickness. There are numerous shreds of undetached slough, or perished portions of the mucous and muscular tunics." (Ewart.)
113. A preparation showing perforation of the cœcum, the result of dysenteric ulceration. The cœcum and a portion of the ascending colon are preserved, and exhibit large, transversely placed, deep ulcers, exposing the muscular coat. In the cœcum itself this process (ulceration) is most marked, affects almost uniformly the whole inner surface, and the cœcal aspect of the ilco-cœcal valve. The perforation is about as large as a rupee (florin), and has thin shreddy margins. The ileum is seen to have remained unaffected. No history.
114. Extensive and deep ulceration of the cœcum and ascending colon. The ulcers are large, transversely placed, and either covered by semi-detached flocculent sloughs, or are bare, exposing freely the muscular coat. The submucous tissues generally are much thickened.
115. Acute sloughing dysentery, involving principally the cœcum, ascending and transverse colon. The cœcum exhibits a ragged tattered condition, and in parts has become so thinned from the rapid destruction of its coats that the peritoneal investment alone remains, and even this has given way at several points in the removal of the intestine *post mortem*. Occupying the first six

inches of the ascending colon is a partially detached tubular slough of the whole of the mucous membrane, and throughout the transverse colon are numerous serpiginioid ulcers of irregular outline, with thickened and shreddy margins. (*Presented by Professor Edward Goodeve.*)

116. A portion of the sigmoid flexure "from a native patient who died of the 'carbuncular form' of dysentery. The submucous cellular tissue is dead and infiltrated with pus. Great thickening of all the coats of the bowel exists. They are very distinct, and may be separated by means of a knife."

A good specimen of acute catarrho-fibrinous dysentery. (*Presented by Professor Chuckerbutty.*)

117. "Large intestine of a native male patient, who died of gangrenous dysentery. Shows large ulcers, to some of which black foetid sloughs are still adhering, and from others of which they have separated. One such slough involves the entire thickness of the mucous membrane for the whole circumference of the gut." (Colles.) (*Presented by Professor Chuckerbutty.*)

118. "The cœcum and ascending colon of an aged up-country Hindu, admitted into the hospital on the 14th December 1866, in a pulseless and moribund condition, with a dysentery of fourteen days' standing. The stools were very offensive,—had a cadaveric smell. He died on the morning of the 21st instant.

The specimen shows gangrenous ulceration occupying a large portion of the cœcum. Such sloughs as have not separated are floated out, and are of a dark (almost black) appearance.* One of them has extended right across the gut, so as to embrace its whole diameter. Along the course of the ascending colon there are innumerable ulcers, varying in size from that of a millet-seed to that of a hazelnut; and, just at the hepatic flexure, there is one large gangrenous ulcer, two inches in length and one in breadth, the longer diameter running transversely.

"On submitting to microscopical examination a portion of a slough from a small ulcer, it was observed to contain nothing but fibrous and areolar tissue, interspersed with granules which did not disappear on the application of ether, hence probably of an albuminous composition. No pus-corpuscles were seen.

"On examining a specimen from one of the dark coloured sloughs attached to the gangrenous ulcerations of the cœcum, it was found to consist of altered areolar tissue, the relics of the follicles of Lieberkuhn, which were crammed with granular matter of a somewhat yellowish colour, and which did not disappear on the application of ether. Other portions of this pigment were of darker colour. The former, the yellowish pigment, is probably the hæmatin of the blood effused during the sloughing process." (Chuckerbutty.)

119. Acute sloughing dysentery. The large intestine of a native male patient, who died in hospital. The whole of the bowel, from the cœcum to the anus, presents an almost continuous series of unhealthy sloughy-looking ulcers affecting the mucous surface.

* This discolouration has been lost owing to long maceration of the specimen in spirit.
J. F. P. McC.

The ulcers run in a transverse direction, are of various sizes and depths, a great many reach the muscular coat, and all, in the recent state, were surrounded by swollen and highly congested mucous membrane. The peritoneal surface of the gut also showed dark-purplish vascularity in patches. The splenic flexure of the colon was united to the diaphragm and, at this spot, a deep ulcer had very nearly perforated. There is much inflammatory thickening of all the coats of the bowel.

120. The cœcum, ascending colon, and a portion of the transverse colon with recent acute dysenteric ulceration. The rest of the large intestine presented even a greater amount of disease. All the coats of the bowel are seen much thickened and swollen, the calibre of the gut contracted, and the mucous surface covered with large irregular-outlined ulcers, reaching the muscular coat, which, in turn, is observed to be eroded. The margins of the ulcers are thick and œdematous, their bases soft and shreddy, or presenting a peculiar mammillated appearance. The solitary follicles,—in such portions of the mucous membrane as remain unulcerated—stand out prominently, and are much swollen and hypertrophied, (acute catarrho-fibrinous dysentery).—From a native male patient, aged 32.
121. Cœcum (inverted) showing the effects of localised acute inflammation (typhlitis). The entire mucous membrane of this portion of the bowel presents a soft, shreddy, gangrenous condition, but is still attached to the subjacent tissues.—From a native female, aged 20, who died in hospital. (See further, “*Medical Post-mortem Records*,” vol. II, 1878, pp. 681-82.)
122. The greater part of the large intestine in a state of acute erupous or fibrinous dysentery. Very little normal mucous membrane exists; the whole surface is covered with large transversely-placed ulcers, the margins of which show inflammatory thickening, and their surfaces are covered by recent granular lymph, so as to present a velvety or somewhat villous appearance.
123. A portion of the sigmoid flexure from a case of acute dysentery, showing extensive and uninterrupted ulceration of the mucous membrane, which presents also a coarsely granular or villous appearance from the presence of an abundant inflammatory (erupous) exudation. The submucous tissues are much swollen and tumefied; the whole gut greatly thickened, and its channel or calibre contracted.
124. Acute fibrinous or erupous dysentery, extending into the small from the large intestine. The lower four inches of the ileum, the cœcum, and a portion of the colon, are preserved.

The mucous membrane of the large gut is seen to be raised in huge transverse folds, of great thickness and solidarity from submucous fibrinous effusion and vascular congestion, while the surface is commencing to be ulcerated, and is also invested by a little recent granular lymph. These changes, by direct continuity of structure, have passed beyond the ileo-cœcal valve into the small intestine.

125. The last eight inches of the ileum, with the cœcum, and a portion of the ascending colon, showing recent acute dysenteric changes. The specimen is preserved to illustrate the extension of the disease from the large intestine (which was throughout and uniformly affected) into the small. In the latter, moreover, the glandular structures are not by preference selected; one Peyer's patch, in fact, a little above the ileo-cœcal valve, is conspicuously free from ulceration. The mucous membrane generally is highly vascular and ecchymosed (in the fresh state), deeply furrowed by transverse ulcers, to the surfaces of which small sloughs, and soft, recent, exudation material (lymph) are adherent, giving a peculiar and characteristically granular appearance (crupous or fibrinous dysentery). The subject was a native female, aged 35, who died on the fifth day after childbirth. (*Obstetric Post-mortem Records*, vol. I, 1876, pp. 263-64.)
126. A portion of the descending colon showing abnormal vascularity with fibrinous exudation and superficial ulceration of the mucous membrane. All the coats of the bowel are thickened, and the calibre of its channel contracted. There was sloughing ulceration of the whole of the cœcum and of a portion of the ascending colon; also multiple abscesses (pyæmic) in the liver. From a native male (Mahomedan) who died in hospital. (See further, "*Medical Post-mortem Records*," vol. II, 1878, pp. 673-74.)
127. The whole of the large intestine, with about six inches of the ileum, exhibiting very characteristically the morbid anatomy of acute fibrinous dysentery. The whole of the gut, from the cœcum to the anus, is enormously thickened; the mucous surface thrown into huge transverse folds; the submucous tissue swollen and œdematous. The mucous membrane is red and raw-looking, covered with recent lymph, forming a granular and almost uniform layer, and extending upwards from the cœcum into the last six inches of the ileum.—From a native male (Mahomedan), aged 20, who died in hospital. (See further, "*Medical Post-mortem Records*," vol. III, 1879, pp. 161-62.)
128. Acute fibrinous or crupous dysentery. The whole of the large intestine is diseased. The mucous membrane is thrown into large, solid, firm, transverse folds, with deep furrows between them, while the surfaces of the ridges are covered with a granular fibrinous exudation, which has a dusky-red or greenish colour. The submucous tissues are all much swollen and rigid, and the calibre of the gut greatly reduced.—From a Hindu male, aged 32, who died in hospital. (See further, "*Medical Post-mortem Records*," vol. III, 1879, pp. 221-22.)
129. A preparation exhibiting the effects of chronic dysenteric ulceration of the sigmoid flexure and rectum. The ulcers are large, irregular-outlined, and freely expose the muscular coat. The walls of the intestine are throughout abnormally thinned, in parts quite semi-transparent.

130. A portion of the colon from a case of chronic dysentery. The bowel has been inverted so as to exhibit the mucous surface, which is seen to be covered with innumerable, round, oval, and irregular-shaped ulcers. They are shallow and superficial-looking, yet expose the muscular coat. All the tunics of the gut present a thinned and greatly atrophied condition. (*Presented by Dr. R. Shaw, of Agra.*)
131. "A portion of the colon of a Madras convict, who died from chronic dysentery at Singapore." The mucous membrane has a peculiar worm-eaten appearance from the presence of innumerable, shallow, irregular-outlined ulcers and minute pittings over the entire surface. The coats of the intestine generally are a good deal atrophied and attenuated. (*Presented by Surgeon Oxley, of Singapore.*)
132. "The cœcum, colon, and sigmoid, illustrating the effects of chronic follicular dysentery. The mucous membrane contains a great number of circular or oval ulcers, some of which have joined each other by mutual extension. Some of the ulcers have healed by granulation and cicatrization, and are now covered by white contracting and glistening cicatrices; others are closing and contracting and advancing to reparation, which is still incomplete. There is general diffused thickening of the mucous muscular and peritoneal tunics. The ulcerative disease is so extensive that there is very little healthy surface to be discovered." (Ewart.)
133. A preparation showing extensive sloughing (dysenteric) of the mucous membrane of the whole of the rectum and sigmoid flexure of the colon, some of which may be seen hanging out of the anus in the form of a tubular gangrenous mass. The muscular and peritoneal coats of the rectum are greatly thickened, of almost cartilagenous density. Those of the sigmoid flexure are thinner, and, at one spot, present a ragged, tattered condition. Perforation here was only prevented by the abnormal thickness of the peritoneal coat, a portion of which has been dissected off the surface of the bowel in order to display this change more effectively. (*Presented by Dr. J. Davis, of Tezapore, Assam.*)
134. The whole of the large intestine, exhibiting an almost continuous series of deep, irregular-outlined ulcers, most marked or extensive in the cœcum and ascending colon, and then in the rectum. In these parts the surface has quite a honey-combed appearance, and scarcely any normal mucous membrane exists, so complete is the disorganisation of the bowel. The muscular coat is throughout either exposed or thickened, and the peritoneal tunic is also preternaturally opaque.—From a European of intemperate habits. (*Presented by Dr. Oxley, of Singapore.*)
135. Chronic dysenteric ulceration of the large intestine. The mucous surface is seen to be covered with innumerable, small, more or less rounded, pitted ulcers, giving a honey-combed appearance to the bowel. The majority of the ulcers reach the submucous or muscular coat. The latter is throughout hypertrophied, and

the calibre of the gut narrowed. (*Presented by Dr. Chueker-buty.*)

136. Chronic dysentery. A portion of the large intestine showing extensive ulceration of the mucous and submucous tissues. The ulcers are exceedingly numerous, are small and pitted, and give a peculiar reticulated appearance to the inner surface of the bowel. The whole of the gut is thinned and dilated.
137. Chronic dysenteric ulceration of the whole of the rectum. The ulcers are mostly small and superficial, with clearly defined sharp margins. They are exceedingly numerous, leaving scarcely any intervening mucous membrane, and that which does exist is thickened, rigid, and shows, in parts, swollen, infiltrated, and infarcted solitary follicles. The disease seems to terminate abruptly at the sigmoid flexure.
138. A portion of the large intestine of a European female, who died from chronic dysentery. The gut is throughout thickened and its calibre reduced. The mucous membrane is covered with small and large ulcers (the latter indicated by black glass-rods). These are either superficial and pitted, or deep, exposing the muscular coat, and with rigid, thickened margins. Some are covered by granulations, indicative of an attempt at repair, while in other parts, again, are large cicatrices, the results of the healing of these ulcers. At such spots the mucous surface is seen drawn in and puckered in a most remarkable manner.
139. Chronic dysenteric ulceration of the rectum and sigmoid flexure, with much dark pigmentation of the gut. The whole of the mucous membrane of this portion of the bowel is involved, is covered with innumerable small, pitted, and eroded-looking ulcers, having pigmented margins and bases. The submucous tissues, especially the muscular coat, are greatly hypertrophied.
140. Very extensive chronic dysenteric ulceration of the large intestine. From a native female who had suffered from the disease for about four months. The original mucous membrane, thickened and altered in appearance, is seen to form irregular-shaped patches and small islands surrounded and separated by ulcers which are of varying size, but deep, and freely expose the muscular coat. The margins of the ulcers are ragged and undermined, their surfaces smooth, or, in parts, a little rough and shreddy from the extension of the ulcerative process to the muscular coat. The disease is most diffuse in character.
141. A portion of the large intestine (colon) preserved to illustrate the mode of healing and cicatrization of dysenteric ulcers, and the large deposit of dark pigment in and around these, in fact, infiltrating the mucous membrane generally;—evidences of long-standing or chronic dysentery. The walls of the intestine are also considerably hypertrophied.—From a European (male) patient, who died in hospital. (*See further, "Medical Post-mortem Records," vol. III, pp. 1-2.*)
142. The sigmoid flexure and rectum showing small, chronic, partially healed, and very darkly pigmented dysenteric ulcerations

of the mucous membrane, and much thickening of all the coats of the bowel, with contraction or narrowing of its calibre.—From a native male, aged 32, who died in hospital.

143. The transverse colon of native male (Mahomedan) patient, aged 32, showing several healed dysenteric ulcers. These were found irregularly distributed throughout the whole of the large intestine, and present the form of darkly pigmented puckered cicatrices. All the coats of the bowel are somewhat thickened. (See further, "*Medical Post-mortem Records*," vol. III, 1880, pp. 723-24.)
144. Perforating ulcer of the deodenum, situated immediately below the pyloric ring. The perforation is as large as a crow-quill, and elliptical in shape. It is sharply defined on the peritoneal aspect of the bowel, and here surrounded by a thin circle of recent lymph. On the inner surface of the gut the ulcer is somewhat stellate in form, its edges well defined, but bevelled down to the perforated spot.—From a sepoy (Hindu), who died in the regimental hospital, 22nd Native Infantry, Alipore. (Presented by Surgeon H. A. C. Grey, 22nd N. I., Alipore.)
145. A portion of the lower end of the jejunum. At the upper part of the preparation is seen a transversely placed cicatrix, the result, apparently, of the healing of an old ulcer; lower down there is a complete perforation through all the coats of the intestine, the peritoneal surface of which is much thickened from recent deposit of lymph. The perforation is just large enough to admit a crow-quill. The patient, a native male, aged 30, died from acute peritonitis. (See further, "*Medical Post-mortem Records*," vol. II, 1876, pp. 181-82.)
146. A portion of the lower end of the jejunum showing two transversely placed broad ulcers, with much contraction of the bowel in these situations, and perforation of the same through the base of the upper ulcer,—an opening sufficiently large to admit a pencil,—through which fœcal extravasation took place into the peritoneal cavity, and gave rise to acute general peritonitis, from which the patient died.

The margins of the ulcers are abruptly defined, a little indurated, and somewhat pale and anæmic. Their bases are slightly mammillated. A distinct cicatricial line is observed along the lower margin of each ulcer, where the bowel also is much puckered and drawn in, and its channel so much reduced as to allow with some difficulty the passage of a finger.

The appearance of the bowel is that of old cicatrization leading to constriction, and of secondary ulceration (probably tubercular) attacking the cicatrix, and commencing to spread.—From a native male, aged 40, admitted moribund, with great distension of the abdomen, much pain and uniform tenderness; frequent vomiting, &c. (See further, "*Medical Post-mortem Records*," vol. III, 1880, pp. 477-78.)

147. A portion of the ileum showing a large perforation, involving nearly the whole of the transverse diameter of the gut, and apparently occupying the situation of an old ulcer. On the inner surface of the bowel the mucous membrane is thickened and eroded; on the outer, the peritoneal coat is covered by recent shreddy or flaky lymph.—“From a native female, aged 27, who had been suffering for a long time from diarrhœa, and who died suddenly, with symptoms of perforation and peritonitis.” There was also a small perforation of the large intestine,—(see prep. No. 148) (*Presented by Dr. R. Stevens.*)
148. A smaller, sharply-defined perforation of the transverse colon, of about the diameter of a crow-quill, from the same case, (see prep. 147). The surrounding mucous membrane is enormously thickened, raised into prominent folds, and superficially eroded and rough-looking.
149. “A portion of the duodenum which has been perforated by a lumbricus. The cephalic extremity of the entozoon is lying in the cavity of the gut, protruding as if from the finger of a glove. The external and internal margins of the aperture are even and glistening. On both aspects the mucous membrane is elongated and loosely wrinkled” (Ewart.)
150. A portion of the ileum (about nine inches above the ileo-cœcal valve), showing perforation of the bowel in two situations, about six inches apart, by round-worms (*A. lumbricoides*). Two of these worms are seen (as found) partially protruding through the walls of the intestine; a third lay within the gut, between the perforations; and a fourth was discovered free in the peritoneal cavity, close to the injured bowel. There was acute general peritonitis, and about forty ounces of mixed fœcal and inflammatory fluid in the peritoneal cavity.—From a Mahomedan male, aged 18, who died in hospital. (“*Medical Post-mortem Records*,” vol. III, 1879, pp. 103-4.)
151. A preparation of the pyloric end of the stomach and upper half of the duodenum,—the latter a good deal thinned, and perforated by a round-worm (*A. lumbricoides*). The patient, a native female, aged 30, died from acute general peritonitis, the result of this accident. (“*Medical Post-mortem Records*,” vol. II, 1878, pp. 473-74.)
152. The cœcum and ascending colon showing perforation of the latter in two places by lumbrici. The mucous surface of the bowel presents numerous, apparently indolent, and chronic ulcerations, and the walls are generally thin and readily lacerable,—conditions which no doubt account for their ready perforation by the entozoa.
153. “A slough, ten inches long, expelled from the large intestine during a fatal attack of dysentery. This consists, in great measure, of the mucous membrane with portions of the muscular tunics. At the upper part of the specimen about half of the circumference of the mucous membrane has been completely detached, but at the lower three inches the whole of this tunic

- has become separated. The slough is more or less perforated in the situations where the ulcers originally existed." (Ewart.)
154. "A large slough from the intestine. A portion of it protruded from the rectum two or three days before it was evacuated. The central part of the slough seems to consist of the entire circumference of the mucous membrane and submucous areolar tissue. The terminal parts are of the same composition, but the canal is incompletely represented." (Ewart.) (*Presented by* Professor Edward Goodeve.)
155. A dysenteric slough, measuring about three feet. "Four inches and a half of it protruded from the rectum prior to death." *
* * * "The lower end of the sloughed mucous membrane is attached at its inferior end about an inch from the anus." (Ewart.) (*Presented by* Professor Edward Goodeve.)
156. "Two portions of mucous membrane perforated in several places by penetrating ulcers, and discharged by a patient suffering from dysentery on the ninth day of the disease." (Ewart.)
157. "A large laminated dysenteric slough, six inches long and two inches wide, from the colon of a native male, Ram Singh. It involves all the thickness of the mucous membrane. On one surface is seen the epithelial lining, partially detached; the other is shaggy with shreds of submucous tissue." (Colles.)
158. "Tubular slough from the large intestine of Joseph C—, admitted with obstinate constipation and pain in the left iliac region. Intussusception of the sigmoid flexure was diagnosed. After a feeling as if something had given way an immense accumulation of fœces was passed, and afterwards the slough, which has been preserved. It consists of the mucous, submucous, and muscular coats of part of the large intestine, probably—from the absence of longitudinal bands—of the lower end of the sigmoid flexure or upper end of the rectum." (Colles.) (*Presented by* Professor Chuckerbutty.)
159. "Another tubular slough from the same patient" as prep. 158. It is five inches in length, involves the whole circumference of the bowel, and consists of the mucous and submucous coats cast off *en masse*.
160. A slough twenty-one inches in length and embracing the whole calibre of the bowel (colon), passed by a European, Peter P—, admitted into hospital with acute dysentery.
161. Thick, fleshy, pus-infiltrated sloughs, from a case of acute dysentery,—a European, aged 25.
162. Epithelial or pellicular sloughs from a case of acute dysentery (European male). Disease of about seventeen days' standing. These delicate sloughs were of pearly whiteness when first passed, have become brownish after preservation in spirit. Are smooth and velvety on one side, ribbed on the other, the latter being the *attached*, the former the *free* surface.

Under the microscope the superficial portion is seen to consist of a densely granular basis-substance which is crowded with (1) epithelial cells, large and round, a few columnar,—all swollen, dark, and undergoing molecular disintegration; (2) smaller, round, granular cells—"mucus" or "gland cells;" (3) fat-crystals

(margarine); (4) a few red and more white blood-cells; and (5) much granular and molecular fat. The deeper layers show, here and there, a trace of fibrillation, and even a few delicate elastic tissue fibres; a more transparent but highly and minutely molecular basis-substance, in which are found numerous round granular cells (leucocytes), in clusters, or assuming a linear arrangement; some granular cylindrical or even tailed epithelial cells, and a few blood corpuscles. These pellicular sloughs are therefore chiefly composed of shred and altered epithelium, with exudation or inflammatory material.

163. A dysenteric slough, about 18 inches in length, tubular in shape, and comprising the whole thickness of the mucous membrane of the rectum and sigmoid flexure. It was found adherent only to the lower part of the rectum; above this, had been quite detached. Similar but smaller sloughs occupied the rest of the large intestine, which from cœcum to anus presented one mass of dark, gangrenous, dysenteric ulceration.—From a native male (Hindu), aged 35, who died in hospital.
164. A tubular dysenteric slough, about 18 inches in length, from the cœcum and ascending colon. It was found on *post mortem* examination, lying loose for the greater part of its extent, in the channel of the gut, but still adherent slightly in the cœcum. From a native female, aged 26. The case terminated fatally from acute peritonitis, the result of perforation. The opening consisted of a mere slit, two or three lines in length, situated at the hepatic flexure, and in close proximity to this slough. The peritoneal coat, much thinned and stretched, had given way.
165. Three portions of the small intestine exhibiting five intussusceptions of the gut at short intervals. No history of the case has been preserved, but, judging from the absence of all inflammatory changes, the invaginations were probably *post mortem*. (*Presented by* Dr. Lyons, of Rohtuk.)
166. “Intussusception of the cœcum into the ascending colon, carrying with it the lower end of the ileum. A portion of the ulcerated and gangrenous gut invaginated is exposed. About four inches of the ileum, at the point of invagination, is *in situ*.” (Ewart.) (*Presented by* Professor Norman Chevers.)
167. The invaginated portion of a huge intussusception of the cœcum and part of the ileum into the ascending colon. The whole of the inverted mucous membrane now exposed is extensively ulcerated (dysenteric). The ulcers in the lower half of the preparation are large and deep, with shreddy surfaces; in the upper half are small, pitted, round or oval.
168. Intussusception of the cœcum and adjacent portion of the ileum into the ascending colon. The whole of the latter “was displaced, and directed from the right iliac fossa, upwards, towards the left side, thereby causing a corresponding displacement of the transverse colon, which was almost doubled upon itself, lying along the left side; the convexity of the curve looking downwards towards the sigmoid flexure.” (Chuckerbutty).—From a native male patient, Shetul, aged 45, who died from “inaction of the bowels and exhaustion nineteen days after the

first symptoms of internal strangulation appeared." (*Presented by Professor Chuekerbutty.*)

169. A portion of the ileum of a native male patient, aged 50, who died from hæmorrhagic brain-softening (old apoplexy with hemiplegia). There is an intussusception of the bowel from above downwards, about the size and shape of an ordinary sausage. About four inches above this part a small polypoid growth is seen, attached to the inner surface of the bowel, and invested by the mucous membrane, which, over a small circumscribed space at the fundus of the growth, has sloughed. The polypus is about the size of an English plum.

The intussusception was not indicated by any symptoms during life, and no inflammatory changes are observed in the invaginated portion of the intestine. It appears, therefore, to have taken place in the *articulo mortis*, or is purely *post mortem*, and may be attributed, in either case, to defective innervation, loss of tone, and perverted peristaltic action; the polypoid growth, moreover, may possibly have been the immediately exciting or predisposing cause of the invagination.

170. Intussusception of a portion of the ileum and the whole of the cæcum into the ascending colon. The patient, a native female, aged 25, by occupation a maid-servant, was admitted into hospital in a moribund condition. There was a history of dysentery with fever of twenty-two days' duration. She was extremely weak and emaciated, and died within 36 hours. Symptoms indicative of perforation of the bowel and peritonitis were observed during the last twelve hours of her life. On *post-mortem* examination there was great vascularity and injection of the entire peritoneum, with much effusion of recent lymph between the coils of the intestine. Just below the liver, in the right lumbar region, a large purplish tumefaction was found, the size of one's fist. It protruded through a rent in the softened and shreddy anterior wall of the ascending colon. Examined more closely, this was found (as in the preparation) to be an intussusception of the ileum with the cæcum into the ascending colon. No inflammatory changes were observed in the invaginated bowel, and there were no symptoms of tumour or obstruction during life; so that the rupture of the colon and the intussusception of the cæcum and ileum must have taken place almost, if not quite simultaneously, and only shortly before death.

Almost the whole of the mucous membrane of the large intestine was diseased, covered with large sloughing ulcers; and the base of one such ulcer had given way, producing the rent through which a portion of the invaginated bowel protruded, as described above. (*See further, "Medicæ Post-mortem Records," vol. I, 1873, pp. 159-60.*)

171. An intussusception of the small intestine. The preparation exhibits a portion of the ileum with several transversely placed, puckered, and partially cicatrised ulcers, producing narrowing and contraction of the bowel in these situations, and, at the lower part, (about twelve inches above the ileo-cæcal valve),

a gangrenous invagination of the intestine, about six inches in length. The peritoneal coat of the outer portion is deeply congested, and a considerable deposit of lymph exists between it and the invaginated portion, but the latter has not yet separated.

Numerous tubercular ulcers were distributed over the mucous membrane of the whole of the small intestine.—From a native male, aged 27, who died in hospital with well-marked symptoms of internal (enteric) strangulation. (*See further, "Medical Post-mortem Records,"* vol. II, 1877, pp. 331-32.)

172. Intussusception of the cœcum with a small portion of the ileum into the ascending and hepatic flexure of the colon. There was general peritonitis with the effusion of fœculent fluid into the abdominal cavity. The invaginated bowel had acquired firm adhesions with its sheath, but the latter having given way (sloughed) on one side, fœcal extravasation and acute peritonitis were set up, and proved fatal. The intussuscepted mass is about a foot in length. Its lower extremity, which reached the transverse colon, presents a highly gangrenous condition.

The patient, a native male, aged 45, was admitted into hospital with "constipation" of six days' duration. A distinct rounded tumour could be felt in the right hypochondriac region, which was solid and dull on percussion. Three large enemata were administered, each bringing away small bits of dry and hard fœces, but affording no relief. Towards evening symptoms of collapse set in, and he died at midnight.

173. "A portion of the small intestine showing an intussusception of about six inches of the ileum. From a native male, a sweeper, aged 20. The patient died seven hours after the performance of abdominal section for the relief of the strangulated gut." (*Presented by Surgeon Shirley Deakin, F.R.C.S., 34th Native Infantry, Allahabad.*)

174. "Preparation showing strangulation of a knuckle of small intestine by an adventitious band. The strangulated gut is about the size of a hen's egg." (Ewart.) No history.

175. A portion of the ileum with the cœcum. About four inches above the ileo-cœcal valve is a broad pale stripe of thinned and contracted bowel, about $\frac{3}{4}$ of an inch wide. At this spot a firm fibrous band, the result, probably, of byegone peritonitis, compressed the intestine, producing complete obstruction. The whole of the small intestine above this spot was inflated and distended; its outline could be seen through the abdominal wall during life,—huge sausage-like rolls lying transversely beneath the latter. The large gut (below) was quite collapsed and empty. Case of a Hindu male, aged 32, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. I, pp. 199-200.)

176. Internal strangulation of the bowel. The preparation shows a loop of the small intestine (ileum), about six inches in length, (situated about three inches above the ileo-cœcal valve), which was strangulated by being forced through a rent in the great

omentum. The latter was unusually developed, thinned, stretched, and firmly fixed to the lower part of the abdominal wall and iliac fasciæ by old peritonitic adhesions. The portions of bowel on either side of the loop exhibit the effects of the strangulation upon the rest of the gut, viz., dilatation and distension of the small intestine above the obstruction, contraction and collapse of the large intestine below this spot.—From a native female, aged 30.

177. About four inches of the ileum with the cœcum, and a portion of attached great omentum. About an inch above the ileo-cœcal valve the ileum is seen strangulated by a narrow strand of the omentum, and its peritoneal surface here superficially ulcerated from the tightness of the constriction.—From a native male patient, aged 20, who died in hospital. (*See further, "Surgical Post-mortem Records,"* vol. I, 1875, pp. 135-36.)
178. A loop of the ileum, about 18 inches in length, strangulated by an adventitious fibrous band, probably congenital. It extended from the mesentery to the anterior abdominal wall on the right side, a little above and internal to the anterior superior spine of the ilium.—From a Hindu (male), Poolin, aged 20, admitted with symptoms of intestinal obstruction, including stereoraceous vomiting, which had lasted for five days. He died within twenty-four hours. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 147-48.)
179. Strangulation of a mass of the small intestine, measuring about five feet, by fibrous bands in the mesentery. The constriction was situated about three inches above the ileo-cœcal valve. The large loop of intestine thus obstructed is seen to be quite collapsed, reduced to less than a third of its normal calibre, and, in the recent state, showed dark purple venous congestion of the peritoneal surface. Above this part the small intestine was found distended with fecal fluid, while the cœcum, below, contained only a few scybala, and the rest of the large gut was contracted and empty.—From a native male, aged 50, a sweeper, employed in the Medical College Hospital.
180. Strangulated loop of intestine, consisting chiefly of the sigmoid flexure. The strangulation was due to twisting upon itself of this portion of the gut immediately above the pelvic brim. There was general peritonitis. The bowels had been completely obstructed for six days.—From a native male, aged 55, who died in hospital.
181. An enormous volvulus, formed by the sigmoid flexure and lower part of the descending colon. The site of the twist was at the pelvic brim, on the left side. The strangulated portion of intestine is extremely distended, its coats greatly stretched and almost transparent. The peritoneal surface is dark purple in colour; the mesenteric vessels ramifying beneath it were highly varicose, and filled with dark (black) blood. There was general acute peritonitis.

The obstruction of the bowels had lasted for about fourteen days.

—From a native male, aged 40. (“*Medical Post-mortem Records*,” vol. II, 1876, pp. 81-82.)

182. A large coil of the intestine, consisting of the sigmoid flexure and a portion of the descending colon, strangulated by a twist upon itself (volvulus). This portion of the gut was found removed from its normal position in the left flank, and forced over to the right side. It constituted (as may be seen from the preparation) an enormous tumour, distended with gas and containing a little fœcal fluid. It lay over the small intestine in the hypogastrium, and reached the right inguinal and lumbar regions. The rectum, below it, measured about eight inches, and was found collapsed and empty. The large and small intestine above the strangulated loop were distended with thin, highly offensive, fœculent fluid and flatus. Both parietal and visceral layers of the peritoneum were abnormally vascular, and about four ounces of sero-sanguineous fluid had collected in the peritoneal cavity, but no true inflammatory exudation (lymph) existed.—From a native male, Arroo, aged 25.—(See further, “*Medical Post-mortem Records*,” vol. I, 1875, pp. 801-2.)
183. Oblique inguinal hernia of the right side. Sac laid open, and surrounding soft parts preserved. The sac has a thickened opaque appearance, as if the hernia had been of long standing; the internal abdominal ring is wide; through it there is seen, protruding into the sac, a considerable mass of omentum. By way of contrast, the left side of the scrotum has been incised to show the normal condition of parts as compared with those on the right. (*Presented by* Professor Allan Webb.)
184. “An oblique inguinal hernia of old standing. The canal is dilated, so that it easily admits the finger at the entrance of the internal ring. Its walls are thickened, and it measures upwards of three inches in length. The sac is about the size of an orange. Its walls are thickened and indurated.” (Ewart.) The dissection made shows well the anatomical coverings and relationships of a hernia of this class.
185. The sac of an inguinal hernia dissected out and laid open to show its relations to the spermatic cord and testicle. It is about three inches in length, and reaches to within two inches of the testicle.
186. “Preparation showing the opened sac of a large inguinal hernia of the right side. The interior of the sac is much puckered and very thick.” A section has been made through the healthy testicle below. Its tunica vaginalis is found quite normal.—(*Presented by* Professor R. O’Shaughnessy.)
187. An old hernial sac (inguinal) showing great thickening and much wrinkling or corrugation of its inner surface. The internal ring is large, easily admitting two fingers. The tunica vaginalis was found filled with coagulated blood (hæmatocœle). The testicle is much compressed and atrophied. All these parts are shown in the preparation. (*Presented by* Mr. Vanderstratten.)

- 188.** An old hernial (inguinal) sac of the right side, found on *post mortem* examination of a native male patient, aged 35, who died of acute sloughing of the scrotum, extending to the right tunica vaginalis. The walls of the sac are thick and leathery. It descended fully two inches below the external abdominal ring, and the internal ring was dilated, admitting one finger easily. The sac contained no intestine, but (see preparation) a thickened fibrous-looking fold or process from the great omentum is firmly fixed to its lower part, and the whole of this structure (omentum) was dragged downwards and to the right. The tunica vaginalis shows the evidences of recent inflammation. The walls are thickened and lined by soft, shreddy lymph. The testicle is compressed and atrophied. (*See further, "Surgical Post-mortem Records,"* vol. I, 1877, pp. 421-22.)
- 189.** An oblique inguinal hernia of the variety known as "infantile." The sac is formed by the unobliterated tubular prolongation of the peritoneum, which, after having formed the tunica vaginalis, has remained patent or pervious from immediately above the testicle to the internal abdominal ring. The contents consist of omentum only, which seems to have been dragged down into this position by a slender cord of morbid adhesion to the inner surface of the sac. No intestine accompanied this omental protrusion. There were no symptoms of strangulation during life. The sac and its contents were only discovered *post mortem*. (*Presented by Babu Jadub Chunder Ghose.*)
- 190.** A knuckle of the small intestine (ileum), about the size of a pigeon's egg, with a portion of the great omentum adherent to it, found firmly fixed (strangulated) at the right internal abdominal ring, and thus forming an incomplete inguinal hernia (bubonocoele). On dissecting the inguinal canal on this side a hernial sac was found, into which this portion of the bowel protruded. This sac extended downwards into the scrotum, and, as may be seen in the preparation, consists of the unobliterated funicular portion of the tunica vaginalis ("infantile" hernia). The testicular portion is distinct and separate, invests the right testis in the usual manner, and does not communicate with the hernial sac.

The portion of ileum strangulated was situated about four inches above the ileo-cæcal valve. It presented a very dark gangrenous appearance. The whole of the large intestine was collapsed; the small intestine above the seat of obstruction was distended with highly offensive, muddy-coloured, fæculent fluid and flatus.

From a native male, aged 30, who died with symptoms of intestinal obstruction. The groins of the patient were examined on his admission into hospital, but no evidences of hernia could be detected. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 499-500.)

- 191.** An enormous hernial sac of the right side (inguinal), communicating with the peritoneum, but separated from the tunica vaginalis. The latter with the testicle may be seen at the lower part of the

preparation imbedded in the serotal tissues. The inner surface of the sac is highly inflamed and vascular, and is coated with lymph both recent and partially organised. The sac contained, as a hernia, a portion of the jejunum, the whole of the ileum, the cæcum, and ascending colon, besides about two pints of sanguineous serum, and nearly a pound (in weight) of flocculent lymph.

The hernia was of long standing and irreducible. The cause of death was acute general peritonitis apparently spreading upwards from the sac.—From a native male, aged 36. (“Surgical *Post-mortem* Records,” vol. I, 1880, pp. 665-66.)

192. A specimen illustrative of the so-called “congenital” variety of inguinal hernia. A portion of the small intestine (ileum) is seen protruded as a hernial tumour into the scrotum, and was strangulated.

The patient, Achow, a Chinese, died during the attempted reduction of the hernia by taxis (under chloroform).

The testicle is seen at the bottom of the sac, the bowel resting directly upon it, the cavity of the tunica vaginalis not having been obliterated. The tunica, therefore, greatly thickened, constitutes the sac of the hernia. At its upper part a portion of the small intestine is seen firmly adherent to the inner surface. To the right is a diverticulum from the sac, the size of an orange, and containing a large coil (some eight inches) of the gut. This is pretty firmly grasped by the constricted neck of the same, but the strangulation appears to have been chiefly effected by strong fibrous bands, which stretched across the interior of the lesser sac, and which were only discovered when the invaginated coil of intestine was forcibly drawn out *post mortem*.

193. A preparation showing the unobliterated or funicular portion of the tunica vaginalis, forming a hernial sac above the right testicle, and illustrating the condition of parts in so-called “congenital” inguinal hernia. No intestine was contained in the sac. Obtained on *post mortem* examination of an American seaman, aged 34, who died in hospital of cholera.

194. “A portion of the gangrenous gut of an oblique inguinal hernia, preserved to demonstrate the extensive disorganization which has taken place both in the incarcerated intestine and in that which is in close contiguity to the same.” (Ewart.) (*Presented by* Professor R. O’Shaughnessy.)

195. A portion of the small intestine (ileum), which constituted a strangulated inguinal hernia, of ten days’ duration, when the patient (a native male) was brought into hospital. The man was at once operated upon, but the gut was found quite gangrenous and soft, and ruptured on manipulation. It was therefore excised, and an “artificial anus” constructed by stitching the ends of the ileum, above and below the strangulated portion, to the margins of the wound. The patient, however, died within twenty-four hours, from exhaustion and peritonitis. With the gangrenous intestine about six inches of the ileum above and below it are preserved. (*Presented by* Professor S. B. Partridge.)

196. Strangulated inguinal hernia. A portion of the ileum, with the cœcum, showing gangrene of a small loop of the former, the result of strangulation in a direct inguinal hernia of the left side. The bowel was so softened that it gave way on manipulation after the sac had been opened. It was secured to the external wound by four wire sutures, an "artificial anus" being thus formed. The patient, a native male, aged 45, experienced great relief after the operation, but he gradually sank, and died from acute general peritonitis. (*See further, "Surgical Post-mortem Records,"* vol. I, 1878, pp. 451-52.) (*Presented by Professor Gayer.*)
197. A preparation showing a ventral hernia, the result of a stab in the abdomen. The sac is the size of a pigeon's egg, and is formed by thickened peritoneum. A portion of omentum protruding into it appears to be twisted upon itself, and partially strangulated. No history.
198. "A portion of the anterior abdominal wall (including the peritoneum) of a patient who suffered from cirrhosis of the liver with ascites. He was tapped, and thirty-six pints of fluid drawn off. Four days afterwards he died. The peritoneum shows thickening from chronic inflammation, and also from patches of recent inflammatory effusion." (Colles.) There is also a hernial protrusion of this membrane (peritoneum) at the umbilicus. It is as large as a pigeon's egg.
199. "A diaphragmatic hernia. The protruded intestine, about the size of a man's fist, is *in situ*." On the thoracic aspect it is invested by the peritoneum, shreds of muscular fibre derived from the diaphragm and the pleura. "The patient was a prisoner in the Chupra jail. He had been very severely beaten with fists and *lattees* when caught in the act of stealing. In consequence of this he remained a long time in hospital. There he frequently complained of pains about the epigastrium, body, and limbs, but there were no characteristic indications of hernia. He was cured of these symptoms and discharged. He returned soon afterwards, suffering from dysentery, from which he died." (*Presented by Dr. Simpson, of Tirhoot.*)
200. A preparation exhibiting the parts involved in inguinal hernia of the right side, and the results of an operation for the radical cure of the same. At the time of the operation the sac was large, and protrusion of the bowel frequently occurred, but was reducible. A modification of "Syme's operation" was performed. The patient made a good recovery, and, as the dissection shows, there is complete obliteration of the sac, while the cord and testicle remain uninjured and healthy.
- Five months afterwards, the man, a French sailor, aged 21, was re-admitted into hospital with severe injuries to the face and right hip, the results of a fall from a house when in an intoxicated condition. He died from pyæmia, and the opportunity was thus obtained for verifying the results of the operation above referred to. (*Presented by Professor J. Fayrer.*)

- 201.** A preparation showing the result of an operation for the radical cure of a right inguinal hernia. The hernia was associated with elephantiasis of the scrotum, and at the same time that the latter was removed in the usual manner, the neck of the hernial sac was occluded by three catgut ligatures, (close to the internal ring), and the rest of it excised. The ligatures are seen to be partly encysted but not absorbed, and the canal completely closed. On both the peritoneal and scrotal aspects there is a puckered condition of the serous membrane which formed the neck of the sac, and a little inflammatory exudation over the catgut, but there was no peritonitis.
- About a week after the operation, the perineal wound sloughed, and this condition extending to the cords and testicles, while burrowing abscesses formed in the loose cellular tissue of the buttocks and inner sides of the thighs,—the patient, a Mahomedan (male), aged 30, died from exhaustion and septicæmia. (*See further, "Surgical Post-mortem Records,"* vol. I, 1881, pp. 771-72.) (*Presented by* Professor K. McLeod.)
- 202.** A portion of the jejunum showing an abrupt and tight stricture, which was situated at a distance of about twenty-eight inches from the pylorus. The constriction has apparently been produced by the healing or cicatrisation of an old ulcer. Its chronicity is evidenced by the marked hypertrophy of the muscular coat, with dilatation of the channel of the bowel above the stricture. These conditions extended upwards for more than twenty inches. No other constriction or ulceration was found in any part of the intestine, and no history could be obtained of the present lesion, as the patient, a native male, aged 36, was admitted into hospital in a moribund condition, and died, within twenty-four hours, from acute pericarditis and pneumonia.
- 203.** A preparation showing ragged ulceration of the rectum, perforation of the bowel, and the establishment of a communication between it and the vagina anteriorly, and the recto-uterine cul-de-sac superiorly. The ulceration is accompanied by enormous thickening of the muscular coat of the intestine, so much so as to have produced very considerable constriction of its channel during life. The disease was suspected to be cancerous. There is, however, no evidence of any malignant growth in the walls of the rectum or its neighbourhood. Under the microscope, no cancerous or other morbid stricture is to be found, and, as there are evidences of dysenteric changes throughout the portion of gut preserved,—viz., numerous shallow, chronic ulcers, &c.,—it is presumable that the whole disease is dysenteric only in character. —"From a native female" (age not recorded).
- 204.** Fibroid stricture of the rectum, about four inches above the anus. The thickening involves the submucous, muscular, and peritoneal coats for a space about three inches in length in this portion of the gut. The mucous surface shows unhealthy ulceration extending throughout the constriction, and downwards to the very verge of the anus. One complete fistula and two or three blind internal fistulæ are seen burrowing beneath

the mucous membrane, two inches above the anal aperture, while the latter presents a fissured and tuberculated appearance, due to a thickened, hypertrophied and redundant condition of the skin and mucous membrane surrounding it.

Examined microscopically, there is no trace of cancerous structure in the thickened tissue forming the stricture. The submucous glands are found atrophied, the muscular tissue hypertrophied, and all these diffusely and thickly infiltrated with a small-celled or nuclear growth, itself undergoing, in parts, fibrillation. These conditions, with the unhealthy form of ulceration at the seat of stricture, may possibly indicate *syphilitic* contamination (of which, however, there was no history obtainable), but no other *specific* disease.

From a native male, aged 30, who died from erysipelas and peritonitis following the division of one of the anal fistulæ.

205. "Portion of descending colon and abdominal wall, showing artificial anus, formed by Amussat's operation, in a case of obstinate constipation. The patient, a Hindu (male), survived the operation thirty hours. There are no traces of inflammation or union having begun." (Colles.) (*Presented by* Professor Chuekerbutty.)

206. A knuckle of the small intestine (jejunum), which constituted a strangulated hernia (left inguinal), and the lower portion of which sloughed spontaneously, leaving the "artificial anus" seen in the preparation. This condition of parts was found on opening the sac of the hernia at the time of operation. The patient, a native male, aged 36, died from peritonitis. (*See* further, "*Surgical Post-mortem Records*," vol. I, 1880, pp. 729-30.)

207. "An old external pile. The hairs indicate where the skin begins, and the thickened and altered mucous membrane ends. It had given a good deal of trouble, and caused bleeding from the interior of the rectum." (Ewart.)

208. "Four external piles (hæmorrhoids), excised from around the anus of an American, aged 23." (*Presented by* Dr. J. Fayrer.)

209. A portion of the lower end of the rectum, showing (1) a fringe of external hæmorrhoids round the margin of the anus, (2) an irregularly eroded and roughened condition of the mucous membrane for two inches above this, indicating the situation where ligatures were applied for the removal of internal piles; and (3) a deep, true ulcer, exposing the muscular coat, and about as large as a rupee, situated about two inches still higher.

The middle "fold of Houston,"—a thick and prominent reduplication of the mucous membrane,—two and a half inches above the anal aperture, is well marked.—From a European male, aged 25, who died from perforating ulcer of the ileum, and general peritonitis, both apparently unconnected with the operation upon the rectum.

210. "Prolapsus of the rectum. The measurement from the integument to the extremity of the prolapsed gut is about four inches, and it is about three inches in breadth. There are several large

ulcers on the extended mucous membrane." (Ewart.) (*Presented by Professor Allan Webb.*)

211. A large prolapsus ani with the thickened, integumental-like, everted mucous membrane,—removed by combined ligature and excision. From a native male patient. The mass is as large as one's fist, and illustrates well both the anatomical and pathological character of this disease. The man died on the twenty-sixth day after the operation from tetanus. There was no peritonitis. (*Presented by Professor S. B. Partridge.*)

212. Prolapsus of the rectum and sigmoid flexure, forming a tumour the size of the foetal head. The external surface is thickened, leathery, and ulcerated from long-continued exposure. Peritonitis was set up between the opposed serous surfaces of the everted bowel, and, becoming general, terminated fatally.—From a native male, aged 36. (*See further, "Surgical Post-mortem Records," vol. I, 1875, p. 188.*)

213. "Portions of jejunum of Ram Persad, who died of cholera, showing several small fatty tumours on the inner surface of the bowel. One is pendulous, ovoid, and larger than a grape." (Colles.)

The structure under the microscope is purely fatty. Two of the growths are sessile, one polypoid. They all appear to have developed from the submucous connective tissue, and receive an investment from the common mucous membrane, which forms also a distinct capsule round the polypus.—J. F. P. McC.

214. "Portion of the colon from the mucous membrane of which a small grape-like tumour protrudes. It consists of fat deposited beneath the mucous membrane."

"The patient came in moribund from dysentery. There was thinning and slight inflammation of the colon, but no ulceration." (Colles.)

The little growth described is a polypoid lipoma.

215. "A very large rectal polypus from a native male (Bukshoo), aged 63 years, removed by ligature." The tumour is ovoid in shape, about the size of a turkey's egg. It is smooth externally, soft and succulent on section. Consists (under the microscope) of broad-meshed fibro-elastic tissue, holding in its interstices a large quantity of yellow fat (fibro-lipoma).

216. About three feet of the ileum from a case of "Hodgkin's Disease" (lymphadenoma),—a native female, aged 25.

The peritoneal surface of the bowel is seen thickly covered with opaque milky-white granulations and flattened nodules, varying in size from a barley-grain to a large pea. These are soft on section, and consist of nucleated cells, closely resembling white blood-corpuscles, imbedded in a delicate, small-meshed reticulum of connective tissue. Others are partially or completely cheesy.

The whole of the abdominal peritoneum was infiltrated with granules, nodules, or patches of similar character; the spleen also; and, in the thorax, the lungs, pleuræ, mediastinal and bronchial glands. (*See further, "Medical Post-mortem Records," vol. I, 1875, pp. 517-18.*)

217. An hypertrophied "epiploon," the size of a small orange, found attached to the transverse colon of a native female, aged 50, who died from dysentery.
218. "Part of the lower end of the small intestine with a diverticulum three inches long, into which is inserted a red glass rod. The communication between the pouch and the intestinal canal is sufficiently capacious to admit the little finger." (Ewart.)
219. "A piece of the ileum with a pouch or diverticulum from it, about three inches long, and an inch in diameter." (Ewart.)
220. A finger-glove-like diverticulum from the ileum. It was situated about four feet above the ileo-cæcal valve. To its fundus is attached a cord-like or vermiform appendix, about four inches in length, the diverticulum itself measuring three inches in length by one in breadth.—From a native male patient, aged 35, who died from acute miliary tuberculosis.
221. A double conjoined diverticulum, found about four feet above the ileo-cæcal valve, in the small intestine of an East Indian (male) patient, who died from uræmic apoplexy. The smaller pouch is about an inch in length and half an inch wide; the larger, three inches long and one broad. They are separated by a distinct prominent fold of mucous membrane, but open into the ileum by a common rounded orifice.
222. A small diverticulum, situated at the junction of the duodenum and jejunum. It is about an inch in length and half an inch in breadth, and opens into the intestine by a wide, rounded orifice, the size of an eight-anna (shilling) piece.—From a native female, aged 31, who died of cholera.
223. Specimen showing a diverticulum about two inches wide, and an inch and a half in length, situated at the junction of the duodenum with the jejunum. It communicates with the bowel by a rounded orifice, the size of a rupee.
- Found on *post mortem* examination of the body of a native male, aged 54, who died from hepatic abscess, &c.
224. A small diverticulum found at about the middle of the ileum. It is nearly two inches in length, and wide enough to admit the thumb. Communicates with the bowel by a rounded opening, the size of a four-anna piece, and terminates very curiously in three separate and distinct cæcal expansions, thereby presenting a kind of trifoliated appearance.—From a native male, aged 25, who died from cholera.
225. An abnormally long *appendix vermiformis* of the cæcum, from a native female, aged 30, who died of cholera. The tube measures nine inches.
226. "Bladder and rectum of a child with imperforate anus. The bladder is laid open posteriorly, showing the position of the urethral orifice, through which a red glass rod has been passed. Two dark glass rods are inserted into the ureters, which occupy the usual place. The rectum terminates in a small *cul-de-sac*, about two inches long, behind the neck of the bladder. It has been opened here on its anterior aspect and filled with

cotton. The remainder of the gut is much smaller and natural in dimensions.

An operation was performed for the relief of this abnormal state of things, by attempting to tap the blind gut with a trochar and canula; the instrument penetrated the prostate gland, and reached to a point about the eighth of an inch from the termination of the rectum. The wound inflicted by the trochar is seen to be on the left side of the mesial line, and is now held apart by short black glass rods.

The urethra opened behind the glans penis, and meconium was passed by this channel during life." (Ewart.) "No communication could be traced between the bowel and the bladder, though both organs had been blown independently of each other, no air passing from one to the other." (*Presented by* Professor T. E. Charles.)

227. "A specimen of imperforate anus. The rectum arrested in its progress towards complete development. The bladder and pelvic bones (cartilaginous) are *in situ*. The pubes have been removed to give a more perfect inspection of the exact condition of the parts. The rectum has been developed to within an inch of the usual point of exit, which is indicated by the introduction of a glass rod. Four inches above the blind end the gut is enormously dilated." (Ewart.) The anal depression in the skin is well marked, although found imperforate as above described.

228. "A preparation demonstrating the condition of the rectum in imperforate anus. The arrest of development has taken place within a quarter of an inch of the usual site of the anal orifice. An artificial opening leads immediately into the dilated gut, a longitudinal section of which has been made. The dilatation is chiefly confined to the rectum. The portion of the sigmoid preserved indicates an insignificant increase in its capacity." (Ewart.)

229. "Abdominal and thoracic viscera of a child born in the Medical College Hospital with imperforate anus and malformed genitals. It took the breast but never made water (although after death urine could be made to flow freely by pressure on the bladder). The penis is small, the scrotum consisted of two folds of skin resembling labia, separated by a fissure a quarter of an inch wide, at the bottom of which the ordinary skin of the perineum was visible. These labial folds contained no testes; they were continuous above the penis, forming a "fourchette," with a free crescentic margin. No dimple or other trace of anus.

Viscera. Thoracic, healthy; heart normal; lungs well inflated; thymus gland well developed. Stomach and duodenum both greatly distended with air, so that the two at first sight resembled a stomach with "hour-glass" contraction. Small and large intestines very much contracted, except the sigmoid flexure, which is enormously distended, and contained about an ounce of meconium. The sigmoid flexure ends in a constricted portion about one-third of an inch long and one-sixth of an inch wide, which becomes continuous with the superior and posterior part of the bladder. The latter reaches to the umbilicus, and contained about half an ounce of

urine. Air cannot be forced from the bladder into the sigmoid flexure, nor meconium from the latter into the former. A large convoluted ureter reaches from the posterior inferior part of the bladder on the left side to the left kidney. From the lower angle of the latter a band of glandular substance passes in front of the aorta, and terminates in a mass not much larger than a pea, partly glandular, partly vesicular, which is the only representative of the right kidney. Supra-renal capsules equal. Other viscera healthy. The aorta divides below the kidneys into a small left branch (which must have given off the iliacs), and a large right one, which looks like its continued trunk, and becomes the solitary umbilical artery.

The infant appeared of full age. No testes or ovaries in abdomen. No sign of uterus." (Colles.) (*Presented by* Professor T. E. Charles.)

230. "Abdominal viscera and part of the pelvis of a child operated on four days after birth for imperforate anus. The ileum was opened in the right groin near the cœcum. The child lived for six days after the operation." (Colles.) (*Presented by* Professor D. B. Smith.)

231. "A portion of the ileum of a tiger, with two perforations half an inch from each other, and bones and teeth. The edges of the apertures are smooth and lined by a layer of lymph." (Ewart.)

"The subject of the case was a full-grown male, which died in the Government Park at Madras. The animal, for some days before his death, had refused his food, and appeared very ill; he was hot and feverish, and his belly tense and painful. In this state he remained for several days, never attempting to change his position, passing no fœces, and scarcely any urine. The body was examined twelve hours after death. The abdomen contained about five pints of very offensive thin yellow fluid. The abdominal and visceral peritoneum were highly inflamed. The ileum for about three inches of its lower third was swollen and converted into a hard tumour, having six perforations through its coats, the widest (more than three lines in diameter) was closed by a portion of bone, and sharp-pointed spicula were seen projecting through the other foramina. Within the swollen part of the intestine there were many loose pieces of bone, and a round ball formed of several angular bits of bone, agglutinated and bound together by a kind of network of hair and wool. This ball adhered slightly to the intestines by means of adventitious tissue, which was highly injected." (Note by Dr. Benza.) (*Presented by* Dr. Benza, of Madras.)

232. "Intussusception of the small intestine of a horse." (Ewart.)

233. Intussusception of the cœcum and a portion of the ileum into the ascending colon of a bitch. (*Presented by* Mr. Fraser, Imperial Museum, Calcutta.)

234. A portion of the ileum, just beyond the ileo-cœlic valve, about twenty-eight inches in length, strangulated by perforation of the great omentum. From a horse who died with all the symptoms of internal obstruction of the bowels. (*Presented by* R. S. Hart, Esq., M.R.C.V.S., Calcutta.)

235. A preparation showing a long-standing hernia (umbilical) of a portion of the ileum of a horse, with fatal perforation of the same from sloughing of the superjacent skin of the abdomen. (*Presented by* R. S. Hart, Esq., M.R.C.V.S., Calcutta.)

236. Diphtheritic or crupous inflammation of the small intestine of a horse. A small portion of the ileum (which was throughout affected) is preserved. The mucous surface is covered by a well-

defined false membrane, about two lines in thickness, which can readily be peeled off with the forceps. The structure, as seen under the microscope, is very simple, consisting chiefly of round, granular cells, closely packed together; some exhibiting fatty changes, others shrivelled and distorted; these are imbedded in a soft, fibrinous, slightly filamentous basis-substance. A few shred and altered epithelial cells are also visible. (*Presented by* R. S. Hart, Esq., M.R.C.V.S., Calcutta.)

237. A portion of the large intestine of a female Uran-utan (*Simia satyrus*), which died in the Zoological Gardens, Calcutta, showing extensive pitted, dysenteric ulceration of the mucous membrane. (*Presented by* Dr. J. Anderson, Calcutta.)
238. "A specimen displaying a perforating wound of the mesentery. The edges of the wound are more or less ragged from suspended shreds of lymph. The neighbouring intestine is penetrated. The injury was inflicted during an affray which took place at a gambling party. The man died from general peritonitis, brought on by extravasation of fœces, and from internal hæmorrhage. The two lumbrici present were taken from the intestine." (*Ewart.*) (*Presented by* Dr. W. H. B. Ross, of Jessore.)
239. A portion of the great omentum showing great thickening and abnormal opacity, the results of chronic inflammation (peritonitis).
240. Enlargement, tumefaction, and great vascularity of the mesenteric glands in a case of typhoid or enteric fever, a native female, aged 22 (*see* prep. No. 104). The affected glands vary in size from a pea to a chesnut, and on section are very soft and pulpy.
241. Swollen and highly vascular mesenteric glands from a case of typhoid fever. The subject was a native male, aged 21. The solitary glands and patches of Peyer in the last eight inches of the ileum were infarcted and ulcerated; one or two of the latter had partially sloughed. (*See* prep. No. 93.)
242. The mesentery from a case of typhoid or enteric fever, a Hindu boy, aged eight years. The glands are much enlarged, soft, and swollen; and, in the recent state, were very hyperæmic. One or two have attained the size of a pigeon's egg. (*See* further, prep. No. 95.)
243. A similar specimen from an Armenian boy, aged 7 years. (*See* in connection prep. No. 98, and "Medical *Post-mortem* Records," vol. I, 1875, pp. 713-14.)
244. Enlarged mesenteric glands from an East Indian boy, aged 7 years, who died from cholera. The largest gland is about the size of an almond. On section all present a pretty firm, opaque, creamy-white colour at the periphery, and are pinkish and hyperæmic towards the centre (in the fresh state).

Although these glands are always larger during early life than in the adult, yet it has been repeatedly observed that in cholera the hypertrophy is at all ages abnormal—*i. e.*, pathological. Probably this condition corresponds to the similar alteration which takes place in the glandular structures of the entire alimentary canal, from the mouth downwards. (*See* also preps Nos. 4 and 71 from the same case.)

- 245.** *Tabes mesenterica.* A preparation exhibiting enormous strumous enlargement of the mesenteric glands. They vary in size from a pea to a sparrow's egg. The majority are more or less uniformly affected; one or two show incipient softening and consequent disintegration. No history.
- 246.** A preparation described as "scirrhus of the mesenteric glands" (Ewart), but found, on microscopic examination, to exhibit no cancerous structure. It consists of a series of greatly enlarged and cheesy mesenteric and lumbar glands, closely and firmly matted together by much dense fibrous or connective tissue. A few of the glands have undergone softening, and even liquefaction.
- 247.** *Tabes mesenterica.* A portion of a large mass found in the abdomen, and consisting of greatly enlarged strumous (cheesy) mesenteric glands. Some of the individual glands are the size of a potato. At the autopsy, the whole of the small intestine was found in close apposition to these glands, the mesentery being throughout thickened and fore-shortened. The lumbar glands were similarly affected, and the kidneys with their ureters, the cholemic ducts, pancreas, &c., all involved in the diseased process, so that these parts were abnormally rigid and inseparable, and thus almost the whole of the contents of the abdomen were capable of being removed *en masse*, and formed a gigantic tumour, the size of a water-melon.
- The tubercular or strumous growth in these glands appears to have been a primary pathological change, for no trace of tubercular ulceration was discovered in any part of the intestinal tract.
- 248.** Miliary tuberculosis of the mesentery, with caseous infarction of the mesenteric glands. No history. (*Presented by Dr. J. Fawcus, Calcutta.*)
- 249.** The mesentery of a native female, who died from phthisis and tubercular ulceration of the bowel, showing, very typically, the enlarged condition of the lymph-glands from commencing tubercular infiltration.
- 250.** The mesentery and a portion of the pancreas from a native male, (Hindu), aged 42, who died from tubercular phthisis and enteritis. "The mass weighed 2lb. 5ozs." The pancreas is apparently healthy. The mesentery and its glands are infiltrated with tubercle. The latter are greatly enlarged, and, on section, firm and cheesy.
- 251.** Cheesy degeneration of the mesenteric glands, which are enormously enlarged, hard, firm, yellowish-white on section. Some have attained the size of a hen's egg.—From a native male, (Mahomedan), aged 55, who died from phthisis and tubercular ulceration of the small intestine.
- 252.** Mesenteric glands enormously enlarged, firm, cheesy, and tubercular. From the same patient as *prep.* No. 80,—an East Indian male, aged 28, who died from phthisis and tubercular enteritis.
- 253.** Mesenteric glands enlarged, and in various stages of tubercular caseation.

The majority of the glands are as large as a nutmeg, are yellowish and firm. Several are not uniformly affected, but show remarkably well the peripheral infiltration of their proper structure (enchyma), the change being observed in individual follicles thus situated. The whole of the mucous membrane of the small intestine was occupied by large tubercular ulcerations.—From a native male, aged 16, who died from phthisis and colliquative diarrhœa.

254. *Tubes Mesenterica.* The mesentery of a native male patient, aged 20, who died in hospital from acute, general (miliary) tuberculosis. The mesenteric glands are enormously enlarged, and by coalescence form rounded tumours varying in size from a walnut to a hen's egg, or even larger. They are seen, on section, to be soft and cheesy.

255. A portion of the great omentum thickly infiltrated with minute tubercular growths, in the form of innumerable opalescent granules, about the size of sago-grains. These are especially thickly distributed along the course of the small mesenteric vessels.

On microscopic examination they present all the histological characters of true tubercle (miliary granulations).

Both parietal and visceral layers of the peritoneum were similarly and diffusely affected. The patient, a native male, aged about 32, died after amputation at the ankle-joint for strumous disease (caries) of the tarsus. (*See further, "Surgical Post-mortem Records,"* vol. I, 1875, pp. 229-30.)

256. About two feet of the ileum, and a portion of the descending colon, showing small nodular and granular infiltration of the peritoneal coat and sub-peritoneal cellular tissue with tubercle. From the same case as the preceding preparation (No. 255.)

257. The great omentum and mesenteric glands exhibiting diffuse tubercular infiltration. In the former it takes the shape of opaque-white growths, varying in size from a mustard-seed to a pea, and producing a peculiar "shotty" condition and appearance of this membrane. Some of these growths are hard and calcified.—From a native male, aged 35, who died from pulmonary phthisis. (*See further, "Medical Post-mortem Records,"* vol. II, 1877, pp. 347-48.)

258. A portion of the mesentery greatly thickened from the presence of multiple nodular growths, varying in size from a hazelnut to a swan-shot. These consist of lymphoid or adenoid tissue, and formed a general infiltration of all the abdominal organs, the diaphragm, &c., ("Hodgkin's Disease" or lymphadenoma).—From a native female, aged 40, who died in hospital. She was extremely anæmic, and had long suffered from a profuse leucorrhœal discharge.

259. The mesentery and mesenteric glands from a case of Hodgkin's disease (lymphadenoma),—a native female, aged 25, who was brought into the hospital in a moribund condition. The glands and mesentery generally are seen infiltrated by an opaque, milk-white, somewhat waxy-looking growth, in the form of small

granules nodules and interstitial thickenings. The structure (microscopic) of these is purely lymphomatous. Some of the glands are partially cheesy. The spleen, diaphragm, peritoneum, &c., were all similarly effected.

260. Portions of the small and large intestine, and the mesenteric glands from a case of genuine leprosy (*E. Græcorum*),—a European male, aged 22.

The external aspect or peritoneal surface of the bowel is covered with opaque-white tubercular-looking granulations and excrescences.

Examined microscopically, these exhibit a lymphoid structure, but the cell-elements are not so uniform nor so well defined as in ordinary adenoid tissue. Among them also, here and there, are found larger, irregular-outlined, more or less angular or pyriform cells, which perhaps are truly "leprous;" and also, a considerable amount of blood-pigment (hæmatoidin) in amorphous granules, and well marked rhombic prisms.

The mesenteric glands are all enlarged, but apparently only from simple over-growth,—i.e., normal hyperplasia: show no caseous transformation. The mesenteric vessels (the arteries in particular) appear to have abnormally thickened and dilated walls. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 765-66.)

261. Calcification with slight enlargement of the mesenteric glands. Sections of five of these are presented to view. "No tubercles existed in the lungs," and the mucous membrane of the intestine appears to be quite healthy. (*Presented by Dr. T. Oxley, of Singapore.*)

262. Mesenteric glands showing melanotic, cancerous infiltration. From an East Indian (male), aged 44. The brain, lungs, liver, bones, &c., were all similarly affected, the case being one of diffuse melanosis. The structure is that of "encephaloid." (*See further, "Medical Post-mortem Records,"* vol. I, 1873, p. 16.)

263. Extensive laceration and pulpification of the upper third of the right lobe of the liver, especially of its superior margin, just below the diaphragm. Taken from a native male, who was run over in the street by a buggy, which fractured all the ribs on the right side of the chest, and at the same time caused the above injury.

The right kidney was also lacerated, the right lung contused, and the right pleural cavity filled with blood. The abdominal cavity contained about two pints of extravasated blood.

264. Extensive rupture of the liver, the result of a blow. The left lobe is almost completely separated from the right, the rupture extending along the suspensory ligament, through the whole thickness of the organ, except for about one inch at the superior border. At this upper border there is a second laceration, about two inches in length, involving also almost the whole thickness of the liver. At about the centre of the anterior (convex) surface of the right lobe is seen the remains of a cyst, with thick, leathery, well-defined walls of organised, fibrous or connective tissue. This, together with the adjacent liver sub-

stance, has evidently been incised (*post-mortem*) in a transverse direction. On the under surface of the same lobe is another, smaller cyst, the size of a hen's egg. It is filled with thick, creamy, yellowish-white fluid, which, examined microscopically, consists of "granule-cells" and "masses" of varying size; also a few faint-outlined, small, round cells, probably withered pus-corpuscles. Probably both cysts represent the remains of old abscesses. The capsule of the liver is everywhere a good deal thickened. The organ itself is somewhat contracted and incipiently cirrhotic.—From a native, aged about 40. "He is said to have received a severe blow with the fist on his back, and fell forwards on his abdomen to the ground."

265. Deformity of the outline of the liver, probably the result of long-continued compression. From a Portuguese lady, aged 45, who died of phthisis.

The constriction or indentation extends transversely across the convex surface of the right lobe, the outer border of which presents a shallow notch. The right kidney was also distinctly flattened along its outer border. The deformity is probably the result of tight-lacing or tight-belted of the body.

266. A section from the right lobe of the liver showing a wedge-shaped, port-wine-coloured, hæmorrhagic infarction.—From a native male, aged 50, who died from acute suppurative nephritis, after the operation of lithotomy. (*See further, "Surgical Post-mortem Records,"* vol. I, 1873, p. 24.)

267. A portion of the right lobe of the liver exhibiting a small circumscribed blood extravasation at the surface, just beneath the capsule. It is situated on the anterior or upper surface, about an inch from the outer margin and lower border of the organ.—From a native male, aged 35, who died from morbus cordis (mitral stenosis.)

268. Highly contracted and cirrhotic liver. "The whole organ is contracted, till it does not exceed in size two closed hands. It has been minutely injected with vermilion, and the solidification which it has undergone from disease is thus rendered more apparent. Some of the lobules are pushed out by the contraction of the intermediate tissue of Glisson's capsule, which has undergone adhesive inflammation. This gives the whole organ a tubercular aspect, although there is in reality not a single tubercle in it. The vascularity of the gall-bladder is well shown." (Allan Webb.) (*Pathologia Indica*, No. 340, p. 254.)

269. Well marked cirrhosis of the liver. The organ is atrophied. Its surfaces are throughout tuberculated, nodulated, and rough. The capsule is thickened and puckered. The gall-bladder is greatly distended, and its walls thinned. The cystic duct is so small and contracted that a probe can only with difficulty be passed through it, (indicated by a fine glass rod). No history except a note to the effect that "the patient died from ascites." (*Presented by* Professor F. J. Mouat.)

270. A very characteristically contracted and eirrhotic liver, with great nodulation and tuberculation of its surfaces.—From a European seaman, John Henry, aged 70, “who had suffered from ascites for a long time.” (*Presented by* Professor Chuckerbutty.)
271. Extremely atrophied and eirrhotic liver,—a very typical example. (*Presented by* Professor D. B. Smith.)
272. Well marked “hob-nail” or eirrhotic liver, from a woman aged 50. History imperfect, but none of intemperance.
273. The liver of a native male (Hindu), aged 60, who died from dysentery. The capsule is opaque, thickened, and puckered everywhere. The surface is nodulated, and the whole organ considerably deformed and atrophied. It is firm and tough on section, and exhibits much fibroid thickening of the interlobular connective tissue, with all the other characters of true cirrhosis.
274. Extreme eirrhotic atrophy of the liver, from a native male (Hindu), aged 23. On his admission into hospital there was ascites with great anasarca of the lower extremities. The liver is small, much contracted, and the right and left lobes imperfectly separated. It is firm in consistency. The surfaces are marked by eminences and hard nodules, varying in size from a pigeon’s egg to a pea. On section, the hepatic parenchyma presents a coarsely granular appearance, these granules consisting of isolated groups of three, four, or more conjoined and compressed lobules, surrounded by a varying thickness of firm fibrous tissue. The atrophy especially affects the left lobe, which is reduced to an extremely small size.
275. Liver highly eirrhotic. Weight $22\frac{1}{2}$ ounces. From a native lad, aged 16, who died in hospital. This preparation is preserved to illustrate the form or variety of cirrhosis which, apparently, often develops in this country under the influence of malarial agency. This boy’s history pointed to repeated “fever,” but there was no indication whatever of spirit-drinking, &c.
276. A very markedly eirrhotic or “hob-nail” liver, with also considerable dark pigmentation of the superficial parenchyma.—From a native male, aged 50, who died in hospital. There was a history of spirit-drinking. (“*Medical Post-mortem Records*,” vol. II, 1878, pp. 747-48.)
277. A very small eirrhotic liver, with almost complete atrophy of the left lobe. The entire organ weighs only $23\frac{1}{2}$ ounces.—From a Hindu, aged 45, who died in hospital.
278. A preparation described in the old catalogue as “the circatrix of an old abscess of the liver.” (Ewart). It is, however, a well marked gummy or syphilitic growth. On the upper surface of a portion of the right hepatic lobe a greatly depressed cicatricial-like thickening of the capsule is observed, with the remains of a few organised bands or tags of lymph, by which probably this part was united to the diaphragm. On section, the thickening of the capsule extends downwards into the parenchyma, and is associated with a small, ill-defined growth, the size of a sparrow’s egg, here situated.

Sections under the microscope exhibit (1) much interlobular fibrous growth, the connective tissue being hyperplastic, and infiltrated with round embryonic cells and nuclei; (2) atrophy of hepatic lobules by compression, with isolation of hepatic cells in alveolar-like spaces, the cells, themselves, not much altered, except that some are more oily and granular than normal; (3) much thickening of the coats of the blood-vessels, with nuclear proliferation around them. All these characters may be justly referred, even at so long a date as this, to true syphilitic infection and new growth. (*Presented by Dr. F. J. Mouat.*)

279. A small portion of the liver of "a patient who died from syphilitic laryngitis, &c." There is irregular thickening and cicatricial puckering of the capsule, and, on section, one large and several smaller nodes, surrounded and intersected by bands or strands of connective tissue continuous with the capsule of the organ.

Under the microscope, the central portion of the nodules consists of granular amorphous, fatty *débris*; towards their periphery, atrophied hepatic cells are found, and others in a state of proliferation,—their nuclei dividing, and the protoplasm of the cells swollen and highly granular. These conditions, indicate syphilitic (gummatous) growth. (*See also prep. No 26, Series VII.*)

280. Syphilitic hepatitis. Liver showing much deformity, especially of the right lobe, from cicatricial-like puckerings and localised thickenings of the capsule, with corresponding deep fissuring and indentation of the surface of the organ. These are best marked on the anterior convex surface of the organ. A fibroid growth extends downwards from these spots into the hepatic parenchyma for a variable distance (half an inch to an inch), and the hepatic tissue around each such growth is atrophied and displaced. The lesions are undoubtedly syphilitic.

Taken from a Chinaman, admitted into hospital in a very debilitated and exhausted condition, with specific (syphilitic) sloughing of the whole of the soft palate.

281. Hepatitis syphilitica. Liver small, very much deformed and irregularly lobulated. The capsule is thin and transparent in some places, while in others it is remarkably dense and fibrous, and forms cicatricial-like depressions, which, when incised, reveal the presence of gummatous growths, and much thickening of the interlobular connective tissue in their vicinity. The growths consist of rounded nodules with caseous centres. The largest of these is situated at about the centre of the suspensory ligament. It is the size of a pigeon's egg, and evidently formed by the coalescence of three or four smaller nodules. Other solitary and smaller, but structurally homologous growths may be observed distributed irregularly near the surface, and chiefly in the right lobe. The hepatic substance generally is soft and greasy; the lobular structure indistinct. No cirrhosis and no amyloid degeneration.—From a native female, aged 35, who died from scorbutic dysentery. (*See further, "Medical Post-mortem Records," vol. II, 1876, pp. 257-58.*)

282. A small contracted liver. In the right lobe, at its inferior margin, surrounding and involving the gall-bladder, and obstructing the cystic and choledic ducts (at the transverse fissure), is a firm, fibroid, gummatous-looking growth, about the size of

an ordinary potato. Closely examined, it appears to consist of a series of coherent nodules, the structure of which has a more or less concentric arrangement. In parts it is seen infiltrated with small, semi-transparent, gelatinous-looking granules. There is no other tumour in the liver, which is incipiently cirrhotic. The gall-bladder has been almost obliterated,—a narrow channel with thickened walls, and containing a few drops of limpid, clear, slightly-yellowish fluid alone represents it, and the biliary canals throughout the liver are dilated, and filled with similar fluid.

On microscopic examination the naked-eye appearances of the growth are confirmed.

It consists of a series of nodules, united by nucleated fibrous tissue and the remains of hepatic cells. The nodules are also fibrous in structure, but show, towards their centres, a hyaline condition or transformation—probably colloid infiltration—of the degenerate portions of each gumma. The hepatic cells in the neighbourhood of these growths are also large, swollen, and colloid-looking (not amyloid). The tumour is therefore, in all probability, a true localised “syphiloma,” complicating or co-existing with incipient cirrhosis of the entire liver.

From a native female, aged 53, who died from dysentery with obstructive jaundice. (See further, “Medical *Post-mortem* Records,” vol. II, 1877, pp. 393-94.)

- 283.** Sections from an hypertrophied liver, showing several circumscribed, fibroid-looking nodular growths or gummata. The whole organ was much enlarged and heavy,—weighed 6lb 2ozs. The general parenchyma is fatty and also amyloid. The patient, a native male, aged 40, died in hospital from perinephritic abscess, &c.

Sections made through several of these growths, and examined microscopically, show that they are separated indistinctly or incompletely from the surrounding hepatic tissue by a zone of proliferating round cells, with a delicate fibrillated intercellular substance, and this is also the structure of the peripheral portions of each nodule. As the centre is approached, both fibrous and cellular elements are obscured by a gradually increasing fatty metamorphosis, and in parts by a more glistening and hyaline change (not coloured by iodine)—probably mucoid; until at last, at the very centre, nothing but a granular and molecular fatty *débris* can be recognised. The hepatic cells are slightly enlarged, fatty, and coarsely granular, besides which, a very large number present a transparent, waxy-looking condition from amyloid infiltration, and, on iodine solution being applied, the greater portion of each lobule gives the characteristic reaction.

The kidneys were contracted, and also amyloid. (See further, “Surgical *Post-mortem* Records,” vol. I, 1877, pp. 381-82.)

- 284.** Syphilitic hepatitis. A section from the right lobe of the liver. On its anterior surface, near the upper margin, there is a small rounded, fibrous-looking growth, and, at its lower margin, a partially cheesy mass, consisting, apparently, of three or four similar nodules which have coalesced.

Examined microscopically, these growths consist of well-formed though delicate and nucleated connective tissue, either taking the shape of broad bands, proceeding from the capsule, for a variable distance, into the liver parenchyma, or of concentric nodules of the same material, including in their areas portions of hepatic tissue, the cell elements of which are markedly

atrophic and granular, or have altogether broken down into fatty or cheesy débris.

From an Italian seaman, aged 42, who died in hospital from the rupture of an abdominal aneurism. ("Medical *Post-mortem* Records," vol. II, 1877, pp. 543-44.)

285. A section from the right lobe of the liver, exhibiting a circumscribed, fibroid nodule, the size of a nutmeg, having at its centre a small cheesy deposit, and associated with cicatricial-like thickening of the capsule of the organ,—a "gumma" or "syphiloma."—From a native male patient, aged 30, who died in hospital from empyema, &c. (See further, "Medical *Post-mortem* Records," vol. III. 1879, pp. 24-25.)
286. "Abscess of the left lobe of the liver, destroying almost the whole of its structure, with the exception of a lamina of its inferior surface. The wall of the abscess is irregular and ragged." (Ewart.) No history.
287. An enormous "encysted abscess of the right lobe of the liver, forming a cavity large enough to hold a man's head." A mere shell of hepatic tissue is left, especially at the upper and outer aspects of the abscess-cavity, which are here formed chiefly by the greatly thickened capsule of the organ and a strongly adherent diaphragm. The left lobe of the liver remains unaffected. (Webb's *Pathologia Indica*, No. 157, p. 260.)
288. A large abscess involving the entire thickness of the upper half of the right lobe, leading to great disintegration of the hepatic parenchyma, and opening through the diaphragm into the right pleural cavity. (Webb's *Pathologia Indica*, No. 1444, p. 261.) (*Presented by* Dr. John Macpherson.)
289. An enormous abscess of the right lobe of the liver, perforating the diaphragm, and involving the base of the right lung. The latter has been considerably destroyed, and participates in the formation of the abscess-cavity. (Webb's *Pathologia Indica*, No. 555, p. 261.) (*Presented by* Professor Allan Webb.)
290. "A large abscess of the right lobe of the liver, opening into the transverse arch of the colon. The walls of the abscess are held apart by a glass rod, and the orifice leading into the canal of the large intestine is plainly observed." (Webb's *Pathologia Indica*, No. 1535, p. 262.)
291. "Liver showing an encysted abscess on the convex surface of the organ, at the junction of the right with the left lobe, and reaching anteriorly to the situation of the round ligament. It is about as large as an orange. * * * * There is a good deal of opacity and thickening of the capsule on every side of the abscess-cavity." (Ewart.)
292. "Liver and a portion of the right lung adherent to the diaphragm. In the liver there is the cavity of an abscess, which contained about a pint of grumous pus. The abscess had formed a communication with a bronchial tube, which led directly into the right bronchus. From a native, admitted in a moribund state." (Ewart.)

293. Abscess of the left lobe of the liver, rupturing through the diaphragm into the pericardium. The communication is indicated by a thick glass rod. The pericardial cavity was found full of pus, and the membrane itself still shows traces of inflammatory exudation, so that apparently some pericarditis had existed (probably from the extension of the hepatic inflammation by direct continuity of tissue) prior to the final rupture of the abscess, which proved fatal. The patient, a European male, aged 30, had acquired fever and dysentery in Abyssinia, and suffered from diarrhoea on the voyage to Calcutta. On admission into this hospital he was greatly prostrated, complained of intense pain over the left side of the chest, and had much distress in breathing. He died suddenly from the rupture of the abscess.

294. A preparation exhibiting an abscess cavity, the size of a foetal head, which occupies the whole thickness of the upper two-thirds of the right lobe of the liver. The outer, upper, and greater part of the anterior walls of this cavity are formed by the thickened capsule, with only a thin shreddy layer of hepatic substance. Below and behind, a thick capsule of dense connective tissue marks the boundary between the cavity and the unaffected liver parenchyma. The inner surface of the former is soft and ragged. It contained about ten ounces of thin, slightly greenish pus.

During life the abscess was punctured in two places by trocar and canula; once very directly, but, on the second occasion, obliquely, as shown by the position of the drainage tube (introduced immediately after puncture). The latter may be seen to pass through a very considerable thickness of liver-substance before reaching the abscess. This second operation was rendered necessary on account of the rapid refilling of the abscess after the first. Unfortunately, however, acute peritonitis followed, to which the patient, a native male, aged 30, succumbed. This is the only abscess in the liver.

295. A preparation showing the rupture of an hepatic abscess into the stomach. The under surface of the left lobe of the liver is adherent to the stomach near its lesser curvature and oesophageal end. Here, a rounded opening is seen, about two inches in diameter, leading from the stomach into an abscess-cavity in the liver, about as large as one's fist. The margins of the opening, on the ventral side, are smooth and sharply-defined. The inner surface of the abscess is soft, sloughy, and shreddy. The stomach was found about half full of thick, greenish-yellow pus. The rupture was, therefore, recent and sudden. No other abscess was found in the liver.

The patient, a native male, aged about 30, had been suffering for two months continuously from fever, pain in the hepatic region, and dysentery. No evidence of the abscess was obtainable during life. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 629-30.) (*Presented by Professor R. C. Chandra.*)

296. A preparation showing a very large solitary abscess of the right lobe of the liver, perforating the diaphragm, and involving the base of the right lung. The lower two-thirds of the inferior lobe of the lung have been more or less destroyed; a communication established between the abscess-cavity and several large bronchial tubes, and, by this means, large quantities of pus were expectorated during life. On *post mortem* examination about two pints of thick, curdy, reddish-yellow pus were found in the abscess-cavity.

There were no dysenteric lesions, the mucous membrane of both large and small intestine was healthy.—From a native male patient, aged 25, who died in hospital. (See further, "Medical *Post-mortem* Records," vol. I, 1875, pp. 937-38.)

297. A section from the left lobe of a greatly enlarged and highly fatty liver, showing the presence of a circumscribed old abscess, the size of a pigeon's egg, discovered *post mortem*. The abscess wall is thick, fibrous, and opaque. Its contents consisted of thick, putty-like, caseating pus. It is situated about two inches below the anterior surface and upper margin of the left lobe.—From an East Indian female, aged 36, who died from chronic dysentery.

The preparation illustrates the occasional fortunate termination of an hepatic abscess,—*i.e.*, by inspissation and caseation of its contents, and contemporaneous contraction and thickening of its walls.

298. A portion of the right lobe of the liver with an encysted cavity, the size of a walnut, which was found filled with thick, yellowish-white, putty-like material (curdy pus), and represents, therefore, the remains of an old solitary abscess of the liver.

Found on *post mortem* examination of the body of a native male, aged 30, who died from chronic catarrhal pneumonia.

299. "A tumour from the liver of a male prisoner in the jail at Rawul Pindi. The patient had suffered from fever during the epidemic of 1873. It is very hard, and seems to have undergone calcareous degeneration, consisting almost entirely of a mass of chalky material."

The "tumour" is a mass the size of a hen's egg, found imbedded in the liver substance. Incised, it is seen to consist of a thin shell of calcareous matter enclosing pulpy, soft, caseous material. The caseous substance is semi-solid, and like putty. There is also a little fluid *débris*, which is distinctly purulent. Examined microscopically, these contents consist of hepatic cells in various degrees of atrophy and degeneration, a large quantity of altered pus cells, and much fat in granules and molecules. The capsule exhibits traces of a fibrous structure, but, the greater part is quite hard and calcified. Sections from the surrounding liver substance reveal no new or morbid cell-growth. The hepatic cells are found either quite normal in appearance, or moderately infiltrated with fatty and dark pigmentary material. The mass or tumour, therefore, most probably represents the remains of a circumscribed and solitary hepatic abscess, which has undergone contraction, with subsequent caseation and partial calcification

of its contents. (*Presented by Dr. J. Ince, Civil Surgeon, Rawul Pindi.*)

300. Three encysted abscesses in the liver,—“one in the left lobe, the size of a closed fist, another in the right lobe as large as a goose-egg; another in the middle lobe close to the cava, the size of a walnut. The man had also an abscess in the brain.” (Allan Webb.—*Pathologia Indica*, No. 809, p. 260).

301. A large abscess of the right lobe of the liver, involving chiefly its inferior surface and outer margin. Numerous, small, disseminated abscesses are distributed irregularly throughout the rest of the organ.—From a native male, (Mahomedan), aged 32, who died in hospital. (*See further, “Medical Post-mortem Records,” vol. I, 1874, pp. 333-34.*)

302. Liver with multiple (pyæmic) abscesses, diffusely scattered throughout its substance.—From a native male, (Hindu), aged 25. The liver is enlarged; its surface is irregular, presenting a series of circumscribed, yellowish-red, slightly projecting, soft nodules, which occupy chiefly the upper surface of the right lobe, but a few also, the left lobe. These vary in size from a pea to a pigeon’s egg, and on section are distinctly seen to be circumscribed abscesses. They contain from a few drops to two drachms of thick greenish-yellow pus. Each is surrounded by a well-marked, dark, hyperæmic zone. The hepatic parenchyma generally, is soft and abnormally vascular. The entire liver weighed 3lb 13 ozs. The whole of the large intestine, from the cœcum to the anus, was found in a state of acute, sloughy, dysenteric ulceration. (*See further, “Medical Post-mortem Records,” vol. I, 1873, p. 112.*)

303. Liver enormously enlarged, and showing numerous abscesses throughout its substance. The largest of these was diagnosed during life; was opened and drained. It is situated in the right lobe, two inches from its inferior margin. The hepatic surface here was found strongly adherent to the abdominal wall. In size this abscess appears to have been about that of an orange, perhaps a little larger, for it is now evidently in a state of contraction, and its cavity was quite empty, showing that the drainage was most efficient.

Standing out from the surface of both lobes, but particularly of the left, are numerous circumscribed, smaller abscesses, varying in size from a hazelnut to a hen’s egg. These have a yellowish-pink colour, and, circumferentially, a darkly congested margin of hepatic tissue. They contain thick greenish-yellow pus. On the under surface of the liver, two other large abscesses may be observed; and, on incising the organ, several similar purulent collections and suppurating foci were discovered, situated deeply in its parenchyma. Such portions of the liver as are not thus affected have a soft, greasy appearance and consistency, and much indistinctness of the lobular structure.

The mucous membrane of the large intestine, from the cœcum to the anus, was thickened, œdematous, of rosy-pink colour, throughout more or less superficially excoriated, and, in the descending colon, sigmoid flexure, and rectum

there were numerous shallow, pitted ulcers, with much hypertrophy of the submucous coats. From a native male, aged 30, who died in hospital.

304. Diffuse (embolic ?) suppuration of the liver. The organ is large. Its surfaces are covered with minute, opaque-white points or dots, which are also thickly distributed throughout the liver-substance, as seen on section. The majority are about the size of a pin's head or sago-grain; a few, by coalescence, as large as a split-pea. They appear to be minute foci of commencing suppuration,—a droplet of thick puriform fluid being obtainable on puncture or scraping. In the sigmoid flexure and rectum there were numerous superficial pitted ulcers and ulcerated patches of the mucous membrane.—From a native male (Oorah) patient, aged 30, who was admitted into the hospital on the 5th September 1877, in a very low and prostrated condition, with pain over the liver, jaundice, loose bowels, pneumonia of the bases of both lungs, and a temperature of 104°F. He died the following day. ("Medical *Post-mortem* Records," vol. II, 1877, pp. 551-52.)

Sections from this liver, examined microscopically, reveal important changes in the interlobular connective tissue. Here, not uniformly, but at very numerous points, a small-celled infiltration can be seen, and the small interlobular vessels—particularly the branches of the portal vein—are obstructed by dark-looking, granular material. The small-celled infiltration is most abundant in the immediate vicinity of these obstructed vessels, and therefore consists probably of emigrant leucocytes. Their size is somewhat smaller than that of blood-corpuscles, but perhaps this may be attributed to a somewhat prolonged preservation of the liver in pure rectified spirit prior to microscopic examination. From these points, as centres, the cells described are seen to invade sparingly the margins of the proper hepatic lobules, insinuating themselves between the flattened polygonal hepatic cells. There appears to be also an irritative hyperplasia of the interlobular connective tissue itself, and a further contribution thus to the interlobular infiltration. Degenerative changes are very apparent in the proper hepatic (secreting) cells,—notably fatty infiltration, minute droplets of oil being very abundant within their protoplasm. One or two of the larger suppurating foci being punctured, the material is found to consist of altered blood-cells and degenerating granular *débris*; no true formed pus-cells, nor can pus corpuscles be discovered among the cell elements composing the interlobular proliferation. Still, the changes appear to be truly inflammatory. Their close association with the blood-vessels (interlobular), and the distinct evidence of the proliferation of the connective tissue here, render this very obvious. Probably, the diffuse inflammation of the organ had only reached an early stage,—i.e., prior to the formation of true pus. There seems to be equally strong grounds for believing that these changes are attributable to embolism of the interlobular veins, and therefore pyæmic in character.

305. A section from an enlarged and abnormally hyperæmic liver, showing innumerable minute abscesses and points of commencing suppuration (pyæmic).

the breaking down of the proper hepatic cells into "granule-cells" and "masses," and finally, into a molecular *débris*—is well seen under the microscope. For some little distance round each such suppurating focus the hepatic parenchyma is found infiltrated with leucocytes, and these also occupy the interlobular connective tissue; are, therefore, presumably derived from

the blood-vessels therein distributed, and indicate widespread or diffuse inflammatory changes.

From a native male, aged 20, who died from acute sloughing dysentery. (See further, "Medical *Post-mortem* Records," vol. III, 1879, pp. 369-70.)

- 306.** Sections from the right lobe of the liver, showing multiple pyæmic abscesses, which were thickly distributed throughout the organ, both at the surface and in the deeper parenchyma. They vary in size from a pea to a nutmeg, and contain thick, yellowish pus, or purulent *débris*.—From a native male, aged 35, who died from acute general peritonitis, after an operation for the relief of a strangulated hernia. There were large, sloughy, dysenteric ulcers in the cœcum and ascending colon. (See further, "Surgical *Post-mortem* Records," vol. I, 1880, pp. 677-78.)
- 307.** A circumscribed, superficial, peri-hepatic abscess. The capsule of the organ is seen to be much thickened. Suppuration has evidently taken place between it and the surface of the liver. The latter presents an ulcerated and disorganising condition over a limited space, about the size of the palm of the hand. Towards the centre of this space a deeper excavation of the hepatic parenchyma exists,—a cavity as large as a walnut,—the inner surface of which has a ragged, shreddy appearance. (*Pathologia Indica*, No. 337, p. 259.) (Presented by Professor Allan Webb.)
- 308.** A circumscribed peri-hepatic abscess, the size of a small orange, situated just beneath the diaphragm, (with which the capsule of the liver is closely blended), at about the centre of the superior border of the right lobe of the liver. The contents of the abscess are mostly caseous, and traces of a distinct pseudo-membrane can be seen lining its cavity. It is probable, therefore, that the collection of pus had been of considerable duration, and become, as it were, encysted. The base of the right lung is adherent to the upper surface of the diaphragm, but neither of these structures have been perforated by the abscess. The pleural cavity has not been involved, although the pleura itself is thickened, and the inferior extremity of the anterior margin of the lung has been drawn down, and fixed to the diaphragm almost immediately over the situation of the abscess-cavity. No history preserved.
- 309.** A large peri-hepatic abscess, occupying the left half of the upper or convex surface of the right lobe of the liver. The proper hepatic tissue is scarcely involved; it is merely exposed, and the upper strata ulcerated over a rounded space, about two inches in diameter, at the centre of the more superficial and true abscess. The latter may be clearly seen to have formed between the liver capsule and the diaphragm. These structures present a ragged and disorganised condition. The base of the right lung is firmly united to the diaphragm over the situation of the abscess.

The pleura was not involved. The patient died from rupture of the abscess into the peritoneal cavity.

310. A preparation showing a large abscess of the left lobe of the liver, chiefly peri-hepatic. It has perforated the diaphragm, and opened into the left pleural cavity and into the pericardium. Acute pleuritis and pericarditis, running a very rapid course, were thus set up, and proved fatal. From a European (Irishman), aged 32, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. I, 1875, pp. 769-70.)

311. Perforation of the diaphragm and pericardium by a peri-hepatic abscess, situated immediately over the left lobe of the liver, but, apparently, not involving the actual parenchyma of the organ. The patient, a native male, aged 40, died from acute (purulent) pericarditis. (*See further, "Medical Post-mortem Records,"* vol. II, 1877, pp. 363-64.)

312. Two sections from a well-marked "nutmeg" liver. A good deal of the colouring matter has been washed out owing to long soakage in spirit. The subject was a native male, aged 25, who died from chronic valvular incompetency, with much dilatation of the right chambers of the heart.

313. Sections from the right lobe of the liver exhibiting a very pronounced "nutmeggy" condition, from intra-lobular congestion and pigmentation.

The patient, a Hindu adult, died in hospital from acute dysentery. There was much chronic pneumonic consolidation of both lungs.

314. Two sections from a darkly pigmented liver (malarial). The patient, a native male, aged 50, was admitted into hospital in a moribund condition, suffering from remittent fever. The brain was similarly pigmented. (*See prep. No. 31, Series VIII.*) The spleen weighed nine ounces.

315. Portions of a very darkly pigmented liver, found on *post-mortem* examination of a case of acute dysentery and intermittent fever, —a native male, aged 22, who died in hospital. Examined microscopically, the pigmentation is seen to affect both the interlobular connective tissue and the hepatic cells. Within the liver lobules it is deposited both in the secreting cells and external to them. The pigment matter is very dark, unaffected by acetic acid, and of granular, amorphous character. It does not seem to follow specially the interlobular vessels, but is more or less uniformly distributed throughout the hepatic parenchyma.

316. Sections from a very darkly pigmented liver. The whole organ was softened, and of a dark slate colour. The spleen was exceedingly pulpy and black, —weighed 14 ounces. The grey matter of the brain had a leaden colour.—From a native male, aged 18, who died of chronic dysentery. (*See further, "Medical Post-mortem Records,"* vol. II, 1877, pp. 651-52.)

317. Hepatitis pigmentata. Portions of a darkly pigmented (malarial) liver. The organ was enlarged; the capsule opaque and somewhat thickened; substance soft, and of a very dark slate colour. The lobular structure is throughout ill defined and much pigmented. Under the microscope the pigment matter

is seen to be granular and very dark. It both infiltrates the hepatic cells and lies free amidst them. The spleen was large, dark, and soft; and the brain (particularly the grey matter) had a leaden tinge from similar (pigmentary) changes. (*See prep. No. 32, Series VIII.*)

Blood removed from the heart, *post-mortem*, showed much dark pigment matter, free or contained within leucocytes (melanæmia).

From a native lad, aged 14. (*"Medical Post-mortem Records,"* vol. II, 1878, pp. 679-80.)

318. A similar specimen from a native male, aged 35, who died in hospital from remittent fever. The whole organ was enlarged, and of an uniform dark slate-grey colour. The spleen weighed $14\frac{1}{2}$ ounces, and was soft and dark. The brain was also pigmented. (*See prep. 33, Series VIII.*) (*"Medical Post-mortem Records,"* vol. II, 1878, pp. 983-84.)

319. A slice from a very darkly pigmented and fatty liver. The pigment is deposited in very large quantity, and in a granular form throughout the lobular structure. It appears to be especially thick in the hepatic cells at the central portions of the lobules. There is also extreme fatty infiltration of the liver cells; others are found (under the microscope) pale, almost colourless, the nucleus indistinct, and the margins irregular, crenated, &c.—From a native boy, aged 12, who died from malarial anæmia and exhaustion.

320. Hepatitis pigmentata. Sections from an enlarged and uniformly pigmented liver, which presented throughout, a dark slate or greyish-brown colour.

The subject was a native boy, aged 14, who died from remittent fever. The grey matter of the brain generally showed a similar darkened condition from pigmentation. (*See prep. 34, Series VIII.*) (*"Medical Post-mortem Records,"* vol. III, 1880, pp. 481-82.)

321. "Enlargement of the liver to thrice its natural size from engorgement with fat. Its section is of a light yellowish colour, homogeneous, and showing little or no clear definition of its elementary or parenchymatous structure." (Ewart.) (*Presented by Dr. F. J. Mouat.*)

322. A section from a highly fatty liver. The whole organ was much enlarged,—weighed 6lb $9\frac{1}{2}$ ounces. The capsule is thickened, and was adherent strongly to the diaphragm. The liver substance has a lemon-yellow colour; is very soft and friable; greasy to the feel; the lobular structure ill-defined and generally anæmic.—From a European male, aged 25, of intemperate habits, who died in hospital from acute peritonitis.

323. A section from the right lobe of a highly fatty ("drunkard's") liver. In the fresh state the whole organ had a pale canary-yellow colour, and was greatly enlarged (weighing no less than 7lb); was throughout very soft and friable. The lobular structure highly fatty. The hepatic cells enlarged, swollen, freely infiltrated with oil granules and globules (as seen under the microscope).

From a European male, aged 30, who had long suffered from chronic alcoholism, and died in hospital during an attack of delirium tremens. (See further, "*Medical Post-mortem Records*," vol. I, 1873, pp. 111-12.)

324. A section from the right lobe of the liver, showing very extensive fatty infiltration combined with incipient cirrhosis of the organ. The weight of the entire liver was 8lb 11 ounces. Taken from a European male, aged 43, who died from chronic alcoholism,—the immediate cause of death being acute dysentery.
325. A section from a highly fatty and amyloid liver, showing also incipient cirrhosis. The entire organ weighed 9lb 10 $\frac{1}{4}$ ounces.

On microscopic examination, the lobules of the liver appear shrunken, but there is not much thickening of the interlobular connective tissue. The parenchyma is found to be very highly fatty, and, when solution of iodine is applied, it is very beautifully manifested that the amyloid change affects the middle and central zones of each lobule, while the peripheral portions and the interlobular tissue are highly charged with fatty globules and molecules.

From a European male, aged 35, who died from syphilitic necrosis of the tibiae, &c. (See prep. No. 149, Series II, and "*Surgical Post-mortem Records*," vol. I, 1877, pp. 871-72.)

326. Sections from the liver, the spleen, one kidney, and some lymphatic glands, all showing amyloid degeneration.

The firm, homogeneous, wax-like and anæmic appearance of these structures is still well preserved, although now about sixteen years in spirit. The reaction with iodine is, however, very faint. No history. (*Presented by* Professor Chuckerbutty, June 3rd, 1865.)

327. Amyloid or albuminoid infiltration of the liver. The organ is enlarged and heavy. Its borders are rounded. The capsule a little thickened on the upper surface; throughout tense and stretched. The hepatic parenchyma is firm, and, on section, has a pale, anæmic, and glistening appearance, as if infiltrated with wax or lard. The test solution of iodine gives a most characteristic (reddish-brown) reaction.

Examined microscopically, the abnormal infiltration or deposit affects the lobular structure almost uniformly.

Similar changes were found in the spleen, kidneys, intestine, &c.—From an East Indian (male), who died from chronic dysentery, and had also commencing pulmonary phthisis.

328. Sections from the liver of an American seaman, aged 45, who died in hospital from pulmonary phthisis. The lobular structure is fairly well defined; of a dark-red colour towards the centres of the lobules, from pigmentation; dull yellowish-white towards the periphery, from fatty changes; or, in some lobules, semi-transparent and glistening from amyloid infiltration, and giving a distinct reaction with iodine solution. All three forms of degeneration—pigmentary, fatty, and amyloid—are combined and illustrated in this specimen. The spleen and kidneys were also "amyloid." ("*Medical Post-mortem Records*," vol. II, 1878, pp. 729-30.)

- 329.** "The liver of an East Indian, containing tuberculous nodules varying in size from that of a pea to that of a walnut. These depositions consisted of amorphous granules, shrivelled, small, angulated, and decaying strumous cells, and a few acicular crystals. There is also demonstrated in the organ a ragged cavity, which was originally filled with coagulated blood. There was found a considerable extravasation of blood into the cavity of the peritoneum—probably the result of violence." (Ewart.)

The nodules referred to are more or less strictly circumscribed, smooth, and homogeneous on section. Under the microscope they exhibit a true lymphoid structure, consisting of large numbers of small round cells in a scanty intercellular stroma. The growth is seen to invade the lobules at their peripheries, and gradually extends towards their centres, compressing, displacing, and causing atrophy of the proper hepatic cells. The growths are probably leukæmic in origin; their structure is certainly lymphomatous.

- 330.** Liver, diffusely infiltrated with nodules of varying size, situated principally near or upon the surface. They are soft, yellowish-white, not distinctly circumscribed, and present, under the microscope, a lymphoid structure—small, nucleated, round cells, in a delicate but distinct, narrow-meshed reticulum of connective tissue. The spleen, kidneys, mesentery, and diaphragm, were all similarly affected. Probably an example of lymphadenoma or Hodgkin's disease.

The patient, a native female, aged 40, was admitted suffering from anæmia, and had a slight gonorrhœal discharge. She died, apparently of exhaustion or asthænia on the tenth day. The growths were not suspected or evidenced during life,—they were only discovered *post mortem*.

- 331.** The liver of an East Indian (male) patient, aged 35, who died from general miliary tuberculosis. The organ is large, soft, and flabby. The whole of the right and left lobes are diffusely infiltrated with minute tubercles, situated both superficially, just beneath the capsule, and also deeply, throughout the parenchyma. They consist of yellowish-white granules, each about the size of a large pin's head. The liver substance is preternaturally anæmic, and its lobular structure ill-defined.

The spleen and kidneys were found similarly affected.

- 332.** Liver with numerous caseous nodules (tubercular). The organ is somewhat small, and of a peculiar dark-slate colour. The capsule is thin and transparent, except over the surfaces of certain circumscribed yellowish-white nodules, which are seen to project slightly from the surface of the liver, on both its upper and lower aspects. These nodules, on incision, are seen to consist of small caseous masses, varying in size from a pea to a chestnut, and similar deposits are found scattered, irregularly, throughout the hepatic parenchyma. A few lymphatic glands at the transverse fissure were found enlarged and similarly cheesy.

Examined microscopically, the centre of each nodule consists of a fatty, granular *débris* only. At the periphery, the structure is purely lymphoid,—small round cells in an indistinctly fibrillated stroma. The hepatic cells in the immediate vicinity are infiltrated with fat, and many are atrophied and partially hyaline.

From a native male, aged 20, who died in hospital.

333. "A liver illustrating many deposits of medullary earcinoma. The whole organ is more or less involved, and large nodular projections of the eancerous material are observed on the convex surface." (Ewart.) No history. The strueture, on microseopic examination, is found to be typically medullary or enkephaloid.

334. Enkephaloid careinoma of the liver. From a native female, aged 60.

The whole organ is much enlarged. The surfaces are nodulated and covered with flattened outgrowths, which vary in size from a pea to a hen's egg.

The majority of these are distinetly circumscribed, flattened at the centre, raised and rounded at the margin. They are soft in consisteney. The substance of the liver is infiltrated diffusely with similar growths.

Microscopic examination shows that their strueture is cancerous (enkephaloid). The cells are large, irregular, and nucleated. The nodules are highly vascular and also bile-stained, and hence present (in the fresh state,) a very brilliant reddish-yellow appearance.

The adhesion and thickening of the capsule of the liver over the peripheral nodules, and their "umbilication" in consequence, are well marked.

The patient was admitted into hospital on the 2nd, and died on the 10th July 1873. She stated that four months previously she first noticed a painful and hard lump in the epigastrium. Since then it has rapidly increased, and become very tender on pressure. There was constipation, vomiting after meals, and a burning pain at the pit of the stomach. She was much emaciated and slightly jaundiced. The liver was felt to be enlarged, nodulated, and hard. Carcinoma was diagnosed.

335. A magnificent specimen of enkephaloid careinoma of the liver. The organ is greatly enlarged, and was found adherent to the diaphragm above, the stomach, pancreas, and colon below. Both surfaees are nodulated. Opaque yellowish-pink tubers are seen projectng just beneath the capsule. They vary in size from a turkey's egg to a nutmeg. The left lobe of the liver seems to be especially involved, but both lobes are extensively infiltrated throughout their whole thiekness.

The small portions of the hepatic parenchyma remaining unaffected are paler than normal, and apparently fatty. The gall-bladder is also involved, and its coats much thickened.—From a native male patient, aged 55. (*See further, "Medical Post-mortem Records,"* vol. I, 1873, pp. 249-50.)

336. Scirrhus carcinoma of the liver. From an aged Armenian, who died in hospital. The organ is somewhat enlarged. Its surfaees are remarkably irregular and uneven owing to the presenee of numerous, more or less circumscribed, nodulated growths, varying in size from a pea to a walnut. They are raised two or three lines above the general surface, are irregularly rounded and tuberculated at their margins; depressed and umbilicated at their centres. Each separate nodule is, as a rule,

surrounded by small secondary infiltrations. The growths reach, for a varying depth, into the hepatic parenchyma, which is generally soft and fatty. The liver weighs 3lb 15 $\frac{3}{4}$ ounces.

Both stroma and cells are well marked in sections examined microscopically, but, from the greater density and abundance of the former, as compared with that usually met with in encephaloid of the liver, and from the more uniform character and comparatively small size of the cell-elements grouped together within the alveoli, these growths appear to be more strictly referable to scirrhus than encephaloid cancer.—(*“Medical Post-mortem Records,”* vol. II, 1877, pp. 373-74.)

337. The liver of a European male, aged 50, showing extensive infiltration with cancerous nodules (encephaloid). These affect the superior or upper surface of both lobes, and particularly the inferior surface of the left lobe, where, one nodule may be observed, quite as large as an orange, formed by the coalescence of several smaller. The majority of the growths are, however, isolated, and have a very characteristic appearance. They project two to three lines from the surface of the organ, have a hard, irregularly-rounded margin, with a zone of dilated injected vessels and flattened umbilicated surfaces. The colour is dull pinkish-yellow. The consistency, on section, is soft. The nodules extend for a variable distance into the hepatic parenchyma. The other abdominal organs were not affected, except the œsophageal end of the stomach, which was considerably thickened and softened from similar cancerous infiltration.

On microscopic examination the naked-eye appearances of these growths are confirmed. Masses of large epithelial-looking cells, with two or three large and distinct nuclei, in a state of rapid proliferation, and granular from fatty infiltration, are seen taking the place of the normal hepatic cells. They are grouped irregularly in a delicate alveolated stroma, formed evidently at the expense of the already existing connective tissue of the liver; the proper gland cells are displaced, and appear atrophied and degenerate.

338. Encephaloid carcinoma of the liver. The organ is a little enlarged and much nodulated. The nodules vary in size from an orange to a walnut. They project from the surface, are of yellowish-white colour, their free surfaces flattened and consistency soft, especially towards the centre of each nodule. They affect the right and left lobes and the lobus quadratus, are also found in large numbers in the deeper hepatic parenchyma.

Examined microscopically, their truly cancerous structure is very distinct. A delicate connective tissue stroma is found, filled with polymorphous nucleated cells, undergoing rapid fatty metamorphosis.

From a Hindu female, aged 40. The left ovary was similarly affected. (*See further, “Obstetric Post-mortem Records,”* vol. I, 1879, pp. 595-56.)

339. Carcinoma of the liver. The surface of the organ is rough and nodulated, covered with button-like projections of a deep-yellow colour, strictly circumscribed, more or less rounded, and with umbilicated centres. These vary in size from half a walnut to a

pea. On section of the liver, two enormous masses are found just below the surface, occupying the whole thickness of the right lobe, from the inferior margin to the middle third. They have a deep orange-red colour (in fresh state), cut very firmly, and have a slightly fibroid appearance. The larger one, which is situated about an inch to the right of the gall-bladder, was felt during life through the abdominal parietis. It is fully as large as a turkey's egg. The smaller is about the size of a hen's egg, has similar appearances, reaches the anterior surface, and inferiorly involves the gall-bladder. The latter is firmly contracted, the cystic duct quite occluded. Numerous disseminated cancerous nodules are found throughout the hepatic parenchyma. This is true scirrhus of the liver.

The largest nodule exhibits a very fibrous structure under the microscope ; the stroma is highly developed, fibroid, and nucleated. It forms, for the most part, small alveoli ; these are filled with epithelial-like nucleated cells of varying size, but mostly smaller than those found in encephaloid, and more uniform (less diversified) in shape. The fibrous decidedly predominates over the cellular structure, and the cancer is therefore probably of some standing, and of comparatively slow growth,—all of which characters belong to scirrhus.

From a Mahomedan female, aged 45, who died in hospital. (See further, "Medical *Post-mortem* Records," vol. II, 1877, pp. 357-58.)

340. Scirrhus carcinoma of the liver. A section from the left lobe of a liver which was enormously enlarged from cancerous growth. The entire organ weighed 12lb 12½ ounces. It occupied the upper-half of the abdominal cavity, reaching downwards to the level of the umbilicus. Both upper and lower surfaces of the organ (see preparation) have a broadly nodulated appearance, and are seen diffusely infiltrated with prominent tumours of a yellowish-pink colour and firm consistency. They vary in size from a pea to a potato. The majority are intimately connected with the capsule ; and, while their margins are rounded and tuberculated, their surfaces are flattened, smooth, and more or less umbilicated. Both margins and surfaces are highly vascular. Over the latter, delicate capillary vessels may be seen ramifying.

Sections examined microscopically display very typically all the characters of true scirrhus carcinoma. Both stroma and cells are found well developed, and the gradual transformation of the proper hepatic tissue into cancer structure is very well marked at the periphery of the nodules. The specimen is a well marked example of primary scirrhus of the liver.

The subject was an East Indian woman, aged about 40, who was brought to the hospital in a moribund condition, and died within twenty-four hours of admission.

341. A portion of the left lobe of the liver, with a large (secondary) cancerous deposit, situated at about the centre of this lobe. It is about the size of a hen's egg, and is soft and brain-like in both consistency and colour (in the fresh state).

On microscopic examination all the characters of encephaloid carcinoma are exhibited,—an infiltration, or rather transformation of the hepatic cells into polymorphous, nucleated, epithelial-like cells, placed in imperfectly developed alveoli (stroma). The structure of the latter is most pronounced in the vicinity of the interlobular spaces, it being probably a development from the normal connective tissue here. The cells are of varying size, many are caudate and spindle-shaped. The nuclei are large and well defined, single or double. The adjacent non-affected hepatic parenchyma shows fatty infiltration of the cellular and intercellular structures. In the boundary line between the two, the gradual transformation of liver-cell into cancer-cell is very beautifully seen. This process apparently consists (roughly) of a swelling up of the protoplasm, with subsequent division of the cell (hepatic) into segments, which form independent cancer-cells or nuclei.

From a European, aged 43, who died from encephaloid carcinoma of the right testicle. The lumbar glands were infiltrated, and secondary deposits were found in the lungs as well as in the liver. (*See further, "Surgical Post-mortem Records,"* vol. I, 1875, pp. 237-38.)

342. Liver thickly infiltrated, both at the surface (just beneath the capsule), and also throughout the parenchyma, with deposits of melanotic soft cancer. These vary in size from a pea, or even smaller, to a walnut. Similar deposits were found in the brain, kidneys, bones, &c.

On microscopic examination, their structure is found to be truly cancerous. Both cells and stroma are well marked and easily identified. The latter is delicate and scanty, and is infiltrated, as well as the cell elements, with dark, granular pigment.—From an East Indian male, aged 44. (*See further, "Medical Post-mortem Records,"* vol. I, p. 16.)

343. A portion of the right lobe of the liver, with a soft, rounded growth, of brain-like consistency and appearance. It is about the size of an orange, and situated about a third of an inch below the convex surface of the organ.

Taken from a native female, aged 27, who died from exhaustion consequent upon the return *in situ*, for the third time, of a large round-celled sarcoma of the right mamma.

Sections from this hepatic growth exhibit a very disintegrated oily condition of the liver lobules, with an infiltration of more or less rounded or oval cells. They have large single or double nuclei, and a granular protoplasm. There is no intercellular formed tissue or stroma. The growth or deposit is evidently, therefore, sarcomatous. There was a small similar deposit in the right lung.

344. A thin-walled simple cyst of the liver as large as a walnut. No history. (*Webb's Pathologia Indica*, No. 333, p. 257.)

345. A similar specimen, and of about the same size. The inner surface of the cyst is encrusted with calcareous deposit. (*Webb's Pathologia Indica*, No. 336, p. 257.)

346. A simple cyst, the size of a pigeon's egg, situated on the upper surface of the liver, at the inferior extremity of the suspensory ligament. It was found filled with soft, cheesy material; no hydatid structure.

347. A section from the right lobe of the liver showing a serous cyst, the size of an orange, situated near the upper margin, close to the suspensory ligament. It contained opalescent, thin fluid, and has a distinct glossy lining membrane. It is bounded on three sides by liver parenchyma, in front by the thickened capsule only, which was adherent to the diaphragm. No other cyst was found in the organ, the general structure of which was soft and fatty.—From a native female, aged 38, greatly emaciated by chronic dysentery. (*“Medical Post-mortem Records,”* vol. II, 1878, pp. 715-16.)

348. “A calcareous deposit enclosed in a cicatrix-looking substance, which is continuous with the parenchyma of the liver. The hepatic structure is a good deal puckered all round the concretion.” (Ewart.)

On making a section through this so-called “calcareous deposit,” the true nature of the same is at once revealed. The calcareous matter forms a mere shell, two to three lines in thickness, and is undoubtedly a degenerated hydatid cyst. It contains several dead and withered echinococci.—From a European soldier, “Private Robert Whiskin, Her Majesty’s 15th Hussars, aged 39 years,” who died from cholera. (*Presented by* Dr. J. Mouat, Inspector-General, Madras.)

349. “A fine specimen of hydatid of the human liver, as large as a closed fist, projecting beyond the free edge of the liver, parallel with the gall-bladder, close to it, but on the right side.” (Allan Webb).—(*Pathologia Indica*, No. 769, p. 257.)

350. A portion of the right lobe of the liver with two large hydatid cysts. One is the size of the foetal head, occupies almost the entire thickness of the right half of this lobe; its walls are thick and leathery, and it is filled with echinococci, varying in size from a pea to a walnut. The other cyst is flattened, situated at the superior border of this lobe; its walls are also much thickened, and the degenerate accephalocysts in its interior are imbedded in much cheesy or sabulous material. (*Presented by* Professor Edward Goodeve.)

351. A portion of the right lobe of the liver of Alexander Burns, a Scotchman, Chief Officer of the B. S. *Newark*, showing (1) an enormous hydatid cyst, situated on the anterior and outer aspect of this lobe, and occupying a considerable portion of the whole thickness of the organ at this part. This cyst supplicated, and was aspirated during life. (2) A second, rather smaller hydatid cyst on the posterior aspect of the same lobe, not communicating with the anterior cyst, and found on *post-mortem* examination to be filled with clear transparent fluid, and a large number of echinococci of various sizes. (*Presented by* Dr. C. H. Joubert, General Hospital.)

352. The liver of a Chinaman (Affoo), aged about 20, who was brought into the hospital in a moribund condition, and died four hours after admission. No satisfactory history could be obtained with respect to his illness, as the patient was unconscious, and his friends merely stated that he had been suffering from

"fever" with some cough, for about a fortnight. The countenance was pale; conjunctivæ jaundiced; pulse barely perceptible at the wrist; abdomen full, hard, and tense.

The liver is enlarged, and its biliary ducts are obstructed by numerous distomata (*Distoma sinense*).

The following note of the condition of the organ, in the fresh state, was recorded at the *post-mortem* examination (9th September 1874):—

The liver is enlarged, of a dark-purplish or slate colour superficially, soft and muddy-looking on section. The portal and hepatic veins are loaded with fluid dark blood. The bile-ducts are filled with thick, yellowish, inspissated bile, and, on slitting them up, numerous small vermicular bodies (distomata) are found obstructing them, and are removed in large numbers. The gall-bladder is distended, the bile thick, of orange-yellow colour, measures about $1\frac{1}{2}$ ounces. No distomata in this fluid, and none found in any part of the alimentary canal or its contents.

The distomata thus found were ascertained to be of a new species; they were described and delineated, and an account of the discovery published in the *Lancet*, August 1875, reproduced in the *Veterinarian*, October 1875. Specimens were sent to Dr. Spencer Cobbold, of London, who proposed the name of *Distoma sinense* for this new fluke, by which it is now known.

The preparation is interesting, as being the first recorded "find" of this species of distoma in man. (See further, Series XX, for description of distoma, and "*Medical Records*," vol. I, 1874, pp. 353-54.)

353. The liver of a native male (Mahomedan), named Jamali Khan, aged 34, who died from dysentery, &c.

The bile ducts are throughout much thickened and dilated, and numbers of small distomata are found within them. About a dozen of these escaped on section of the organ, and about twice this number were found on dissecting out and laying open the biliary canals in a portion of the right lobe. The rest of the liver has been left entire, and it is probable, that all portions are pretty equally filled with these parasites, because, as far as the dissection has extended, they can be squeezed out of the open mouths of all the larger and medium-sized ducts. The liver itself is somewhat dark, moderately firm. The gall-bladder contained about $1\frac{1}{2}$ ounces of bile, which was thick and yellowish-green. The cystic duct was free. No distomata were found in the gall-bladder, and none in the contents of the alimentary canal.

No evidence of the presence of ova can be detected, on microscopic examination, of bile from the gall-bladder, and of scrapings from its lining membrane. The lining membrane of the biliary canals is vascular, and its epithelium abundant (catarrh). In the epithelial and coloured *débris* ova are detected.

They are of the usual type, and measure $\frac{1''}{750} \times \frac{1''}{1333}$.

Sections from the liver parenchyma show fatty infiltration of the lobular structure, but not to any marked degree. The bile-ducts are considerably hypertrophied, their walls abnormally thick, and epithelial lining shred.

The distomata filling the biliary canals are of the variety known as *Distoma conjunctum*, and the preparation has this special interest attaching to it,—viz. that it is the first known instance or example of a *human* liver being infested by these parasites. Hitherto, they were supposed to be confined to the genus *Felis*

(foxes and dogs.) The discovery was made on the 9th of January 1876. (See further, Series XX, for description of the distoma, and the *Lancet*, March 4th, 1876, p. 343; also, "Medical *Post-mortem* Records," vol. I, 1875, pp. 963-64.)

354. Liver fatty and somewhat "nutmeggy." The bile-duets are prominent, and full of thick yellow secretion; they are also occupied by numerous distomata, which exhibited, on removal and placing in water, undulatory movements, indicative of vitality. (*Post-mortem* performed three hours after death). One fluke was also found in the gall-bladder. They belong to the variety known as *D. sinense* (*McConnell*).—From a Chinaman, aged 28, who died from pulmonary phthisis. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 81-82.)

355. The liver of a Chinaman, aged 40, who died in hospital from remittant fever. The bile-duets are dilated, their walls thickened, and their channels occupied by numerous distomata (*D. sinense* *McConnell*). The general hepatic parenchyma is dark and hyperæmic; its consistency soft; the lobular structure greasy and indistinct.

From one incision in the right lobe of this liver about thirty flukes were removed. They were found either singly or in little groups. The whole organ is thickly infested with them.

356. The liver of a Mahomedan, aged 18 (a coolie), who died from acute dysentery. The bile duets throughout the organ are more or less dilated, and their walls thickened. They contain numerous flukes (distomata). These are found in twos or threes, or in small colonies of six or eight, coiled upon each other. Only one was found in the gall-bladder. They are examples of the *D. conjunctum*. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 203-204.)

357. Peculiar malformation of the liver, consisting of the development of a kind of middle lobe between the usual right and left lobes of the organ. This accessory lobe is separated by deep longitudinal fissures from the lateral lobes. The condition seems to have been congenital. "From a native female." (*Presented by* Baboo B. C. Chatterjee.)

358. The liver of a European male, who died in hospital from pneumonia. The left lobe is exceedingly rudimentary. It is represented by a small, somewhat tongue-shaped portion of hepatic parenchyma on the under surface of the left border of the liver, very indistinctly separated from the right lobe. The latter is greatly hypertrophied. No "lobus quadratus" can be distinguished. The suspensory ligament extends along the left border instead of the anterior surface of the liver; its position may be identified by the portion of the round ligament left *in situ*. (*Presented by* Assistant-Surgeon Gopal Chunder Roy, Howrah.)

359. Obstruction and compression of the cystic and common choledic ducts by a series of greatly enlarged lymphatic glands. The gall-bladder is somewhat contracted—probably from the same cause. No history. (Webb's *Pathologia Indica*, No. 807, p. 257.)

- 360.** Gall-bladder found distended with transparent limpid fluid, destitute of all colour. It is much dilated, sausage-shaped, six inches in length, three and a half inches in circumference at the fundus. The cystic duct was obstructed by a gall-stone the size of a hazel-nut. (*Presented* by Professor Norman Chevers.)
- 361.** Much thickening of the walls, with contraction of the cavity of the gall-bladder, which was found to contain no fluid bile. The cystic duct is obstructed (*see* preparation) by an irregularly rounded, hard calculus, the size of a nutmeg. The subject was a native female, aged 20, who died from puerperal peritonitis. ("Obstetric *post-mortem* Records," vol. I, 1879, pp. 509-10.)
- 362.** "The liver and pancreas of a native female, who died in hospital from diarrhœa (with frequent voiding of round worms). Two round worms occupied the ductus communis choledochus. Their heads reach the bifurcation, their bodies hang into the duodenum." (Colles.)*
- "The stomach was full of gelatinous mucus. The mucous membrane of the duodenum and upper half of the jejunum intensely injected in patches a foot long. The gall-bladder contained ten or eleven drachms of dark bile, which escaped freely on pressure, shewing that the worms did not obstruct the duct."
- 363.** A specimen showing the occupation of the hepatic duct and its branches by round worms (*A. lumbricoides*). A section made into the convex surface of the right lobe revealed numbers of these parasites protruding from the divided biliary ducts. About two hundred were found in the intestine. The liver itself is soft and friable, of deep orange-yellow colour.
- "Under the microscope the hepatic cells were all shrunken in size, had lost their characteristic granular appearance, and were loaded with large drops of oil." (Colles.) (*Presented* by Dr. Chuckerbutty.)
- 364.** Rupture of the gall-bladder from a kick on the abdomen. "The rupture is at the fundus, and would admit a No. 5 catheter. The gall-bladder has been opened on the left side, and a blue glass rod passed through the rupture. It has the appearance of a clean punched-out hole; there is no thinning of the coats in the neighbourhood. The patient was an Irish soldier (Thomas Downey), aged 27.
- He was brought to the hospital on the 17th August 1874 by the police, who had found him in the house of a public woman. He had a slight cut on the left hand, and complained of violent pain in the abdomen, where, he said, he had been kicked, but no mark was visible. He gradually sank, and died on the 19th." (Colles.) (*Presented* by Professor J. Fayrer.)
- 365.** Atrophy of the gall-bladder, "apparently from the organization and subsequent contraction of lymph in and on its parietics. It is about the size of a large filbert." (Allan Webb's *Pathologia Indica*, No 334, p. 257.)

* Only one worm, nearly separated into two portions, is to be seen now in the situation described.—J. P. P. McC.

366. Dilatation of the gall-bladder from pressure of an enlarged lymphatic gland upon the cystic duct, producing very great contraction and almost obliteration of the same. The choledic duct remains quite free, and is somewhat dilated.
367. Gall-bladder much elongated and dilated from the impaction of a mass of irregularly-rounded cholesteric calculi, varying in size from a mustard-seed to a pea. The cystic duct is pervious, but a good deal contracted.
368. Dilated gall-bladder and bile-ducts. The walls of the former are much attenuated—almost transparent. No history.
369. A gall-bladder occupied by calculi. These are about a dozen in number, faceted, each about the size of a hazel-nut. The nucleus consists of dark colouring-matter, the crust of mixed phosphates and cholesterine. The cystic duct is much dilated.
370. Gall-bladder filled with calculi, which are irregularly faceted, and none much larger than a pea. They are composed of biliary colouring-matter only. The cystic duct is much dilated.
371. Hour-glass-like contraction of the gall-bladder, the walls of which are much thickened. Too large cholesterine calculi may be seen impacted above and below the constricted part. (*Presented by Professor Allan Webb*).
372. A gall-bladder containing a large number of small, brilliantly white, cholesterine calculi, varying in size from a millet-seed to a pea. "Its walls are thrice their normal thickness. The peritoneal coat is dull, opaque, thick, and somewhat puckered from the contraction of organized lymph."
373. The liver, with a large biliary calculus completely filling the gall-bladder. It is very dark and hard, and, apparently, chiefly composed of biliary colouring matter. The long diameter of the calculus measures three inches: it is biconical in shape, and, at the widest part about an inch and a half. The liver is small and contracted (cirrhotic).
374. A gall-bladder much contracted and hour-glass shaped. Its walls are much thickened, and adhere closely to the surfaces of two rounded, mulberry-looking, rough, cholesteric calculi, each as large as a pigeon's egg, which completely fill its cavity.—From a native female patient, aged 27, who died of dysentery.
375. Obliteration of the gall-bladder and cystic duct by biliary concretions which form an irregular, roughened, "mulberry-like" mass, at the fundus. The coats of the gall-bladder at this part have become calcified and inseparably united to the contained calculi. The latter are composed of biliary pigment, with a thin crust of cholesterine.—From a European (male), aged 40, who died from chronic dysentery, &c. ("*Medical Post-mortem Records*," vol. III, 1879, pp. 1-2.)
376. A section from the liver including the gall-bladder. The latter ulcerated and perforated by impacted gall-stones.—From a native male, aged 21, brought into the hospital in a moribund condition, and who died from acute peritonitis, the result of this lesion. (*See further, "Medical Post-mortem Records," vol. III, 1880, pp. 675-76.*)

- 377.** A preparation showing the pancreas and retroperitoneal lymphatic glands infiltrated by cancerous growth (scirrhus). These structures formed a mass, the size of two fists, in the epigastrium. The aorta and the œsophageal end of the stomach were included in the tumour. The latter was constricted, and, as well as the whole of the lesser curvature of the stomach, infiltrated with tuberos, opaque-white, waxy-looking deposits of the same character as the main growth.

Sections from all these parts, examined microscopically, exhibit the histological structure of glandular carcinoma (scirrhus). It is most developed and advanced in the head of the pancreas; in the retroperitoneal glands is less marked. All parts show morbid hyperplasia and increase of fibrous tissue; some, the transition stages from this condition to true carcinomatous stroma, with well-defined alveoli and polymorphous, crowded, epithelial elements.

From an aboriginal New Zealander (a seaman), aged about 25, who died in hospital. (*See further, "Medical Post-mortem Records,"* vol. II, 1877, pp. 569-70.)

- 378.** Scirrhus carcinoma of the pancreas. The head of the gland is enlarged and indurated. It presses upon and obstructs the common cholemic duct at its termination in the duodenum. There is a good deal of thickening of the mucous and sub-mucous tissues at the pyloric end of the stomach, and the peptic glands and follicles here situated are enlarged and swollen, but free from cancerous infiltration (examined microscopically). Sections, however, from the pancreas reveal a true scirrhus structure.—From an East Indian (male) patient, who died in hospital (with marked symptoms of obstructive jaundice.)

- 379.** Cancer of the pancreas. From a native prisoner, Moosai Kunjur, aged 30. The disease involved the stomach, a portion of the liver, the right kidney, and the spleen; also, the mesenteric glands. All these formed a large nodulated mass, occupying the upper half of the abdominal cavity. The head of the pancreas is enlarged to about three times its normal size, and the whole bulk of the gland is much increased. Its outline is nodulated, but soft and succulent, and, on section, spongy. Much thick mucoid fluid escapes from the cut surface.

Thin sections from various parts of the organ, but especially from the head, swell up enormously when floated in water, and some are thus completely disintegrated. When examined microscopically, a distinct, but delicate stroma of fine connective tissue is seen forming more or less rounded spaces or alveoli, which are filled with large, round, epithelial cells, undergoing rapid colloid or mucoid metamorphosis. Some of the alveoli are almost destitute of cell-elements, merely filled with glistening, mucilaginous-looking material, or the same with fragments of degenerated cells. The same material is seen infiltrating, in parts, the stroma, and giving it an œdematous, softened, and swollen appearance. The structure is therefore typically carcinomatous, but of the *colloid* variety.

(*Presented by* Dr. Shirley Deakin, Superintendent, Central Jail, Allahabad.)

- 380.** Pancreas with two large bloody extravasations (apoplexies or infarctions) occupying the head of the organ. One is about the

size of a walnut, the other rather smaller. They are, for the most part, soft and dark, a little laminated and decolourised at the periphery only. Similar hæmorrhagic "bloeks" were found in the spleen and kidneys; there was also a large blood extravasation into the left middle lobe of the cerebrum (*see* prep. No. 6, Series VIII).—From an Armenian (male), aged 20, who died from acute valvular endocarditis, &c. (prep. No. 102, Series VI).

381. A preparation showing an enlarged and swollen condition of the pancreas, which crepitates on pressure. This condition is due (as seen on dissection) to great dilatation of the pancreatic duct, from the tail to the head of the organ, and its occupation by greyish-white calculi. These vary in size from a hazel-nut to a pea; besides which, considerable calcareous *débris* fills this channel, and also, some thick milky fluid—inspissated pancreatic juice.

Found on *post-mortem* examination of the body of an aged Hindu, (*Æt* about 60), who died from dysentery. (*See* further, Appendix to *Post-mortem* Records, vol. II, 1878.)

CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART VI.

INJURIES AND DISEASES OF THE SPLEEN,
THYROID GLAND, SUPRA-RENAL
CAPSULES, AND LYMPHATIC GLANDS.

INJURIES AND DISEASES OF THE KIDNEYS
AND URETERS.

SERIES X AND XI.



SERIES X.

INJURIES AND DISEASES OF THE SPLEEN,
THYROID GLAND, SUPRA-RENAL
CAPSULES, AND LYMPHATIC GLANDS.

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1. Spleen of an artillery corporal ruptured. The patient "had received a severe fall on his left side the day before his admission into hospital." The rupture extends through almost the entire thickness of the organ, running transversely from within outwards, about two and a half inches below the head or upper extremity of the spleen. The organ is enlarged, its texture very soft and friable. (*Presented by Mr. Leekie.*)
2. "An enlarged spleen, ruptured by a blow after a meal, or when the stomach was full. The capsule has been cleanly torn, but the parenchyma underneath is ragged and uneven." (Ewart.) The rupture alluded to is almost an inch and a half long, transverse in direction, and situated at the posterior or left margin of the superior extremity of the spleen.
3. "An enlarged and softened spleen, on the under surface of which is a gaping chasm, penetrating deeply into the substance of the organ, running transversely from the inner margin, and upwards

of two and a half inches in length. The rupture of the capsule is not straight, and there is slight unevenness in its margins. The splenic parenchyma, however, is ragged and irregular, and between the two walls of the chasm there is a portion of pulp and coagulum interposed." (Ewart.) No history. (*Presented by* Dr. W. G. Ellis of Patna.)

4. "Ruptured spleen." No history. The organ is large and swollen. A jagged rent extends obliquely across the whole of the outer or convex surface, from the superior to the inferior margin, and taking a direction from above, downwards and outwards. (*Presented by* Professor Chuckerbutty.)
5. Spleen showing a double rupture at the anterior margin, near the inferior pointed end of the organ. The lower rupture is an inch and a half in length, and comparatively superficial. Three-fourths of an inch above it is the second fissure, half an inch in depth, and reaching the hilum internally. The whole organ presents a shrunken appearance. The capsule is much wrinkled. From a native (Ram Lall), who fell off a tamarind tree, a height of from 20 to 30 feet, and sustained, besides the above injury, a rupture of the kidney (*see* No. 3, Series XI), and a compound fracture of both bones of the forearm. (*Presented by* Professor J. Fayer.)
6. A ruptured spleen. The organ is enlarged to about twice its normal size. The outer smooth surface and inner scolloped margin show a series of lacerations of the capsule extending for a variable distance into the substance of the organ. The deepest is at the superior extremity, where the splenic substance has been broken down and presents a shreddy, disorganised condition for a depth of at least two inches.

Taken from an adult native, a mason (*raj*), who, while engaged in some repairs to the southern façade of the hospital, missed his footing and fell to the ground, a distance of about 40 feet. He was picked up almost insensible and completely collapsed, and died two hours after the accident.

7. Rupture of the spleen. There are four lacerations on the under surface of the organ, two of which, near its inferior margin, reach the hilum, and are each about an inch and a half in length and half an inch deep. The other two fissurings are near the upper part of the posterior margin, and are more superficial. The entire organ weighs 21 ounces, is large and soft.

The deceased (a Mahomedan), named Shaikh Baboo, was said to have been beaten by two East Indian lads.

At the *post-mortem* examination (24 hours after death) several pints of blood were found in the peritoneal cavity. (*Presented by* Dr. Mackenzie, Police Surgeon.)

8. Extensive rupture of the spleen, the result of a kick on the side. The organ is enlarged, very soft and pulpy. On its anterior or outer surface, at about the lower third, a deep transverse laceration is seen, passing almost completely through the whole thickness of the spleen. It is crossed by a longitudinal fissure which ruptures the capsule, extends upwards and outwards

to within half an inch of the posterior margin, near the upper extremity, and, below the transverse laceration, extends completely through the whole thickness of the inferior extremity of the organ. On the posterior aspect of the spleen two other transverse lacerations are seen, both a quarter of an inch deep, running transversely inwards from the posterior margin towards the hilum, which indeed is reached by the lower of the two. The subject of these injuries was a native (Mahomedan) lad, aged 16.

9. "A portion of the spleen which protruded through an incised wound in the abdomen, and was removed by ligature. The patient did well." (Colles.) (*See further, Indian Medical Gazette*, April 1868.) (*Presented by Dr. Hyatt, Civil Surgeon, Ranchi.*)
10. An enlarged, soft, and dark spleen. From a case of enteric (typhoid) fever—a Hindu boy, aged 8. (*See prep. No. 95, Series IX.*)
11. "An enormously enlarged spleen taken from a patient suffering from what is called spleen disease, with intermittent fever. The organ is somewhat larger than an ordinarily sized liver, and has a division into two lobes. Its peritoneal covering is marked here and there with patches of lymph, and the peripheral structure of the organ beneath the investing membrane is, for an extent varying from one to two inches, very much condensed—like liver." * * * * * "The centre of the organ is occupied by a tissue of loose and flocculent capillary vessels, floating like moss and resting upon irregular loops about as thick as hair." (Allan Webb.) * (*Pathologia Indica*, No. 556, p. 142.)
12. Chronic (malarial) enlargement of the spleen. The organ is increased to about three times its normal size. The capsule is throughout thickened, opaque, and leathery, the surface corrugated and coarsely granular. The cut surface is more or less homogeneous and firm, particularly towards the periphery, where it has a condensed appearance for a depth of from half an inch to an inch. (Webb's *Pathologia Indica*, No. 680, page 143.)
13. "Enlargement of the spleen, taken from a girl who had been a sufferer from sloughing ulceration of the labia and the soft parts over the pubis. The capsule and peritoneal investments are much thickened from organized lymph exudation. The section demonstrates about half an inch of the peripheral parenchyma to consist of dense hepatic-looking structure, so compactly arranged as to preclude the possibility of distinguishing any of the trabecular spaces with the unaided eye. Within this lamina the fibrinous prolongations of the capsule are more manifest, and near the centre of the organ they are hanging forward loose and in a measure devoid of the spleen-pulp, which has here escaped during maceration." (Allan Webb.)
14. "Enlargement of the spleen. Its capsule is thickened, opaque, and slightly puckered from contraction of the exuded lymph. The parenchyma is in some parts tolerably even and regular, but it is generally of a honeycombed character, from the escape

of the pulp contained in the enlarged trabecular spaces during maceration." (Ewart.)

15. Two firm, chronically enlarged spleens. The capsules are much thickened and covered by shreddy bands of adventitious organised fibrous tissue. The splenic parenchyma is throughout much condensed and the trabeculæ thickened. Towards the centre, however, of each organ a honeycombed appearance is presented, owing to a washing away of the pulp substance during long maceration in spirit.
 16. A large, lobulated, firm spleen, with a "spleniculus" or accessory spleen attached by a fold of thickened peritoneum to its hilum, near the upper extremity. The former exhibits great thickening and dark-brownish discoloration of the capsule, a firm condensed condition of the parenchyma, with prominence of the Malpighian bodies, and general pigmentation. At the lower extremity a deep depression or furrow is seen, passing nearly through the entire thickness of the organ here, and almost separating a portion of the same to form another spleniculus. (*Presented by Mr. D. Picachy, of Hooghly.*)
 17. Enormous hypertrophy of the spleen, the organ weighing 5lb 2 ozs. "From a Hindu adult (Ramdial), who had been suffering for a long time from intermittent fever, and died in hospital."
 18. Greatly hypertrophied spleen, from a native woman, aged 35, who had suffered from malarial fever more or less continuously for twelve months previous to her admission into hospital. She was admitted with ascites, and paracentesis was performed twice, at intervals, giving temporary relief; a third operation was followed by acute general peritonitis, to which she succumbed. The capsule of the organ is greatly thickened—quite leathery in parts. The splenic parenchyma is firm, dark-red, shows much thickening of the trabecular structure, irregular pigmentation, and all the other characters of a chronic "ague-cake."
 19. Leukæmic hypertrophy of the spleen. The organ is enlarged to about three times its normal size. The capsule is throughout much thickened and opaque. The surface is rough and tuberculated from the projection of numerous opaque-white, firm, nodular growths. They are also well seen on section, and consist of the Malpighian bodies of the organ in a state of hyperplastic development. These bodies vary in size from a mustard-seed to a pea, are firm, more or less homogeneous, and occupy almost the whole of the pulp-spaces in the substance of the organ. They can be picked out readily with the needle, and when transferred to the stage of the microscope, exhibit a purely adenoid structure, consisting of lymphoid corpuscles thickly aggregated, and possessing a scanty, small-meshed stroma.
- The fibrous trabeculæ throughout the spleen are much thickened, and where the hypertrophied Malpighian bodies have fallen out during maceration, a honeycombed appearance is presented by the cut surface of the organ. The pulp-substance has in great part disappeared, compressed and dispersed by the overgrowth

- of the Malpighian bodies.* No reaction is obtained with solution of iodine. No history. (*Presented by* Dr. F. Oxley, of Singapore.)
20. A less well-marked example of leukæmic spleen. Organ heavy, compact, enlarged to about twice the normal size. Capsule rough, opaque, and coarsely granular, or slightly tuberculated. On section, trabeculæ hypertrophied; Malpighian bodies stand out prominently, are about the size of millet-seeds, firm, homogeneous, and seen under the microscope to be composed of simple adenoid tissue. No iodine reaction. (*Presented by* Professor Edward Goodeve.)
 21. A small, atrophied, and pigmented spleen, from a case of acute dysentery.
 22. An atrophied spleen, from an aged native (aged 60 years), "who died in the Howrah Hospital after an accident." (*Presented by* Assistant-Surgeon Gopal Chunder Roy, Howrah.)
 23. Small, contracted, and atrophied spleen. The capsule is opaque and thick. The substance somewhat dark, but otherwise healthy. The weight $2\frac{1}{2}$ ounces.—From a native woman aged 33, who died of chronic dysentery.
 24. An atrophied spleen, weighing only two ounces. From a case of chronic dysentery,—a native male, aged 25, who died in hospital.
 25. A very small, atrophied spleen, weighing only an ounce and a half. From a native woman, aged about 80, "who was run over by a buggy and died seven hours after the accident from rupture of the liver and fracture of twenty-one ribs." (*Presented by* the Police-Surgeon.)
 26. Atrophied spleen, weighing not quite half an ounce. From a European (male), aged 68, who died of chronic dysentery.
 27. "An enlarged spleen with localized thickening of the capsule. The altered capsule is fully three-quarters of an inch in thickness and about three inches in its longest diameter. On one side, facing the hilum, its extension is abruptly limited; but on the other side its edges taper off, and the section shows that this gradual diminution of thickness extends some distance into the capsule. The altered capsule consists of an external and internal dense and hard lamina of coarse fibrous tissue, enclosing a thick deposit of recently-organized lymph." (Ewart.)
 28. A spleen showing dense fibroid thickening of the capsule over the upper third of the convex surface. It is here nearly a quarter of an inch in thickness, has the appearance of, and cuts like, cartilage. The thickening is, however, quite homœoplastic, consisting of white and yellow fibrous tissue only.
 29. "A small spleen, from which a part of the capsular investment has been carefully removed to show its thickness, which uniformly measures almost a quarter of an inch. It is as hard, firm, and unyielding as cartilage." (Ewart.)
 30. The spleen of a native patient who died from pneumonia. The surface of the organ is studded with small, button-like, opaque-

* This is well seen in thin sections placed under a low power.

white and waxy-looking, flattened projections. These are composed of condensed fibrous tissue, and the result of chronic inflammatory thickening of the splenic capsule.

31. A similar specimen, the capsular thickening, however, being confined principally to the lower third of the organ, where it is of cartilaginous appearance and density.—From a Mahomedan patient, aged 50.
32. “A spleen, normal in dimensions, but containing at one point tissue undergoing disintegration from suppurative inflammation. A portion of the pulp underneath the capsule is broken down, and there is a deposit of lymph over this situation.” (Ewart.) (*Presented by Professor Allan Webb.*)
33. “Abscess of the spleen. At each extremity of the organ there is an excavation the size of a pigeon’s egg, the sites of abscesses, over which the splenic parenchyma, capsule, and peritoneum are completely destroyed. The parietics of the cavities are irregular, with flocculent shreds hanging from them. The organ is moderately enlarged, and the capsule slightly thickened from the organization of lymph.” (Ewart.) (*Presented by Dr. Chuckerbutty.*)
34. A large abscess at the upper end of the spleen. The organ itself is enlarged. The abscess is the size of an orange. The thickened capsule alone forms its anterior boundary or wall. This was accidentally torn during removal *post mortem*. The whole organ is enlarged, dark, and soft. There had been no symptoms indicating the existence of this lesion during life. The patient, a native female, aged 30, died from rheumatic fever complicated with recent valvular endocarditis. (*See prep. No. 132, Series VI.*)
35. Spleen greatly enlarged, and showing a circumscribed abscess-cavity the size of a small orange at its superior extremity. The walls of this cavity are superficially sloughy, and were adherent to the diaphragm. The latter was found similarly softened, sloughy, and perforated,—an opening about the size of a rupee. The base of the left lung, partially adherent over this spot, was carnified; the left pleura acutely inflamed, and its cavity completely filled with sero-sanguineous fluid.—From a native lad, aged 15, who died in hospital.
36. Abscess of the spleen, the size of a turkey’s egg, situated at the superior extremity of the organ. The abscess-cavity has a well defined outline, its walls are thick, dark, and sloughy, but exhibit the remains of a well formed lining or pyogenic membrane. It contained nearly four ounces of thin, reddish pus, and, at its centre, a slough of the splenic substance about the size of a walnut.
The organ is enlarged to about twice its normal size (weighing $11\frac{1}{2}$ ozs.), and is throughout dark and soft. From a European (male), aged 43.
37. A very large abscess of the spleen, occupying the upper half of the organ, which is itself increased to about four times its normal size. The walls of the abscess-cavity are soft, thinned,

and shreddy. This abscess communicated, by perforating the diaphragm, with the left pleural cavity, into which it ruptured, producing death suddenly. On *post-mortem* examination the left pleural sac contained nearly two pints of pus and a large blood-clot, the latter projecting into it from the disorganised spleen. In the preparation it may be seen filling a portion of the large cavity which has been hollowed out of the substance of this organ.

From a native female, aged 35, who had been suffering for a long time from intermittent fever and dysentery. "Three small abscesses were found in the left kidney."

38. "An atrophied spleen taken from an aged dropsical patient. It is about two inches and a half long and scarcely an inch in thickness. The notch is half an inch in depth. There are two rudimentary fissures on its convex border. The capsule is slightly wrinkled from shrinking of the parenchyma, and there are a few opaque spots upon it." (Ewart.) The surface is roughened and coarsely granular, presenting a cirrhotic appearance.

39. Cirrhosis of the spleen. The capsule of the organ is of dark greyish-yellow colour, and much thickened. The splenic substance is intersected in all directions by fibrous bands (thickened trabeculae) continuous with the capsule at the periphery. In parts this fibroid tissue is rendered still denser, and has a "gritty" feel from the presence of minute calcareous particles. The proper pulp-structure is much atrophied and compressed. The surface of the spleen is uneven and tuberculated. From a patient who died from dysentery. "The liver was incipiently cirrhotic." (*Presented by Professor Chuckerbutty.*)

40. A contracted and cirrhotic spleen. The capsule is rough, opaque, and much thickened. The substance firm, tough, anæmic, of a greyish-red colour, and the trabecular or fibrous structure throughout hypertrophied. The surface of the organ is rough, irregular,—almost nodulated.

The liver was markedly cirrhotic.—From a native male, aged 50, who died in hospital. ("Medical *Post-mortem* Records," vol. II, 1878, pp. 747-48.)

41. A small, wedge-shaped "block" or hæmorrhagic infarction of the spleen, rather larger than a pea, and situated just beneath the capsule, at the periphery of the organ, near its lower or inferior extremity. It is undergoing decolourisation.

42. Spleen with two large decolourising "hæmorrhagic infarctions" situated near the upper and lower extremities of the anterior notched margin of the organ. The spleen is large, dark, and pigmented.

From an Armenian (male) patient, aged 20, who died from valvular endocarditis, &c.

Similar infarctions were found in the pancreas and right kidney.

43. Spleen showing at its lower extremity a kind of globular appendix, connected to the rest of the organ by a constricted portion or neck. This globular body, on section, is seen to be composed

chiefly of a bloody extravasation, which has become imperfectly encysted. It looks quite like an ordinary hæmorrhagic infarct, but may perhaps have been the result of some recent injury. The specimen was taken from a Negro, aged 35, who died in hospital of cholera.

44. Spleen exhibiting numerous small, wedge-shaped, distinctly circumscribed "blocks" or infarctions of a dark-purple colour, thickly distributed at the periphery of the organ, just beneath the capsule, and a few more deeply imbedded in its substance. —From a native male, aged 28, who died of cholera.

45. A portion of a spleen which weighed 4 pounds 11 ounces. The capsule is thick and opaque; the substance dark and irregularly pigmented. At the upper and outer part of the superior end of the organ is a large "block" or hæmorrhagic infarction, distinctly wedge-shaped, of pinkish-yellow colour on section, about two inches square at the surface, beneath the capsule, and reaching from half an inch to an inch into the substance of the organ. It is surrounded by a dark hyperæmic zone of congested vessels. —From a native male, aged 21, who died of remittent fever and dysentery.

46. Spleen with one large and several smaller "hæmorrhagic infarctions," occupying the peripheral portion of the parenchyma, just beneath the capsule, which is slightly elevated by them. In the fresh state these presented a pale-yellowish or buff colour—*i.e.*, were undergoing decolourisation.—From an East Indian, aged 27, who died from pyæmia after the operation of forcible dilatation of the urethra (by Holt's method) for stricture.

Both kidneys presented numerous blood extravasations and points of incipient suppuration. (*See* prep. No. 55, Series XI.)

47. Pyæmic lesions of the spleen. The organ is much enlarged. Its capsule is thickened, was adherent to the diaphragm, and over its upper half highly injected and inflamed. On section here an "infarction," rather larger than a walnut, may be seen, extending from just below the capsule into the splenic pulp, and occupying the whole thickness of the superior extremity of the organ. The greater portion of this "block" is in a state of yellowish cheesy-like transformation, but a portion of it, towards the hilum, is softened and purulent, and, more deeply seated around this infarction, are several small pea-like abscesses. (Weight of spleen $16\frac{1}{2}$ ounces.)

From a native male, aged 34, who died from osteomyelitis and pyæmia after amputation of the arm for gangrene following compound fracture of the humerus. (*See* further, "*Surgical Post-mortem Records*," vol. I, 1877, pages 403-404.)

48. Typical amyloid or "sago" spleen, from a girl, aged 18, who died from dysentery complicating renal dropsy. The organ is enlarged to more than twice its normal size; is very firm and hard. On section anæmic, and freely infiltrated with brownish, glistening, wax-like material,—the altered and hypertrophied Malpighian bodies. A characteristic reddish-brown reaction is

given with solution of iodine. The kidneys were similarly affected. (*See* prep. No. 59, Series XI.)

49. Thin sections from the above spleen, exhibiting to perfection the abnormal condition of the splenic pulp, due to the presence of the infiltration. The greatly enlarged Malpighian bodies closely resemble boiled and swollen sago-grains.
50. Amyloid degeneration of the spleen. The organ is enlarged to about three times its normal size. The capsule is tense, stretched, irregularly thickened, and opaque. The substance is firm, pale reddish-brown; in the fresh state presented a peculiar glistening waxy appearance, which has been somewhat lost after preservation in spirit. The changes both physically and microscopically are characteristic of albuminoid or "waxy" infiltration, affecting chiefly the Malpighian bodies and the smaller arteries, the pulp-substance still remaining comparatively free. A distinct reddish-brown reaction is given with iodine.—From an East Indian (male), who died from chronic dysentery, and had also commencing pulmonary phthisis.

Similar changes were observed in the liver, kidneys, intestine, &c.

51. Amyloid or albuminoid infiltration of the spleen. The organ is enlarged to about four times its normal size. The capsule is stretched, opaque, and thickened, shows dark-brownish discolouration in patches. The borders are rounded and smooth. The splenic substance is firm, anæmic; had a glistening waxy-looking appearance when fresh. The Malpighian bodies are chiefly affected, are enlarged and swollen. A characteristic reaction is given with iodine.

The patient, a native male, aged 30, was admitted into hospital very low, anæmic, and with general anasæra. The urine contained albumen. There was fever and bronchitis. The latter passed into pneumonia, of which he died on the eleventh day.

Similar (amyloid) changes were found in the kidneys and small intestine.

52. Amyloid ("sago") spleen. The organ is greatly enlarged; its borders rounded; consistency firm. The capsule is opaque and thickened. On section numerous rounded semi-translucent bodies are seen thickly infiltrating the whole splenic pulp-substance. These are about the size, colour, and consistency of boiled sago-grains, and, when treated with solution of iodine, give a characteristic reddish-brown reaction.

Similar (amyloid) changes were found in the ileum; and both kidneys were also slightly affected.

From a European (male) patient, aged about 40, who died from hepatic abscess, &c.

53. Amyloid spleen, weighing 9 ounces.—From a European seaman, aged 37, who died of acute uræmia from Bright's disease. The kidneys were large, pale (tubular nephritis), and slightly amyloid. There was also amyloid infiltration of the liver.

Examined microscopically, the degenerative change in the spleen is seen to affect (1) the minute arteries of the organ, and (2) the Malpighian bodies. It does not extend into the pulp-substance, and is therefore, presumably, in the

early or less advanced stage of the disease. The walls of the arteries are lustrous and swollen; the Malpighian bodies enlarged and of the appearance of small boiled sago-grains. Both give a very distinct reaction with iodine solution. (See further, "*Medical Post-mortem Records*," vol. II, 1876, pp. 281-82.)

54. Spleen of about normal size and weight, but incipiently amyloid. The substance generally is firm, and of a pale reddish-brown colour. Here and there points or granules of a semi-transparent glistening character are seen, about the size of mustard-seed. These are the enlarged and infiltrated Malpighian bodies, and give a distinct reddish-brown reaction with solution of iodine. The liver and kidneys also showed amyloid changes.—From an American seaman, aged 45 years, who died in hospital of pulmonary phthisis. (*Medical Post-mortem Records*," vol. II, 1878, pp. 729-30.)
55. The spleen of a native child, aged about eight years, who died from chronic dysentery with much malarial anæmia. The organ is enlarged; the capsule slightly opaque and thickened; the substance dark, somewhat soft; the Malpighian bodies remarkably large, opaque-white, and prominent. Under the microscope, the lymphoid structure of the latter is seen well developed, and apparently excessive even for early life; the surrounding pulp-substance is atrophied and pigmented, and a very large quantity of dark, granular pigment is found deposited in the fibrous tissue of the trabecular structure, which is throughout hypertrophied.
56. A large and darkly-pigmented spleen, showing also much fibroid thickening of the capsule. From a native male patient, who had long suffered from intermittent fever and "spleen disease," and who died in hospital.
57. An enlarged and darkly-pigmented spleen. At one extremity there is a circumscribed oval-shaped thickening of the capsule, about the size of the palm of the hand, and from one-fourth to one-third of an inch in thickness. It has a laminated fibrous structure, and appears to be the result of localised inflammatory changes in the splenic capsule. The weight of the organ is 14 ounces. From a native male, aged 30, who died of dysentery. (*Presented by* Dr. Edward Bovill, General Hospital, Calcutta.)
58. A large, darkly-pigmented spleen (malarial), exhibiting also much hypertrophy of the Malpighian bodies and trabecular structure.—From a native male patient, aged 16.
59. A soft, swollen, very darkly pigmented spleen (malarial).—From a native male, aged 24, who died from dysentery, with a history of having suffered, for twenty-one days previously, from intermittent fever. He was brought to the hospital in a moribund condition. In this case the liver and brain (grey matter) also showed an unusually dark appearance.
60. A large, soft, and darkly-pigmented spleen.—From a case of malarial melanæmia—a native lad, aged about 14, who died in hospital. The liver and brain showed similar pigmentary changes, and the blood removed from the heart *post mortem* and examined microscopically revealed the presence of much dark

pigmentary matter, free or contained within leucocytes. Weight of the spleen $10\frac{1}{2}$ ounces. (*See* also prep. No. 317, Series IX, and "Medical *Post-mortem* Records," vol. II, 1878, pp. 679-80.)

61. Spleen dark and pigmented, with also three or four small "infarctions" undergoing decolourisation.—From a native boy, aged 12, who died from malarial anæmia and exhaustion. The liver was similarly affected. (*See* prep. No. 319, Series IX.)

In the spleen the pigmentation is most profuse; the colouring-matter very dark, granular or amorphous; free, and also deposited within the cells of the pulp-substance, and infiltrating small round cells, probably leucocytes. The splenic structure is much disorganised;—in parts no trace even of the same can be seen,—nothing but a confused mass of red and white blood corpuscles, tailed and filiform epithelium, and dark pigment granules.

62. "A portion of the spleen of a native female in which a circumscribed mass of strumous deposit was found in the parenchyma." At the surface of the organ, at the spot where a section exposes this deposit, a group of tubercles underneath the capsule are observed. "Both lungs were found crammed with tubercles." (Ewart.)
63. Spleen studded over with tubercular deposit, confined chiefly to the capsule. From a case of general tuberculosis. "Rifleman Lalloo Guram, 2nd (Sirmoor) Gurkha Regiment, Native Infantry." The lungs, peritoneum, pancreas, and mesentery were all found similarly affected. (*Presented by* Surgeon R. T. Lyons, 20th P. N. I., Rawul Pindi.)
64. Spleen enlarged and softened, and exhibiting a large number of tubercular granules and small nodules at the periphery, situated mostly just beneath the capsule.—From a case of general tuberculosis,—an Australian, James B., aged 30. The liver was similarly affected, and the mesenteric glands enormously enlarged and cheesy. (*Presented by* Professor Chuekerbertty.)
65. Spleen diffusely and thickly infiltrated with miliary granulations (tubercle.) These are either pale-grey or yellowish, and about the size of small sago-grains.—From a native male, Sobrati, aged 30, who died from acute general tuberculosis. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 343-44.)
66. A section from the lower half of an enlarged spleen, showing two cretaceous chalky deposits. The larger is the size of a nutmeg, and somewhat deeply situated; the smaller, nearer the surface, and at the lower extremity of the organ, is the size of a pea. Both are surrounded by condensed fibroid tissue.—From a native male, aged 35, who died from acute peritonitis following an operation for strangulated inguinal hernia.
67. Spleen a little enlarged and infiltrated with soft, yellowish-white nodules, consisting of adenoid or lymphoid tissue. The liver, kidneys, mesentery, &c., were all found similarly affected (Hodgkin's disease, or lymphadenoma.) The patient, a native female, aged 40, was admitted into hospital suffering from anæmia, and had a slight leucorrhœal discharge. She died, apparently of exhaustion, on the tenth day. The morbid

growths were not suspected during life—only discovered *post mortem*. (See also prep. No. 330, Series IX.)

68. Hodgkin's disease, or lymphadenoma. The spleen of an East Indian woman, aged 25, who was brought to the hospital in a moribund condition.

The organ is enlarged, its capsule thickened, and substance infiltrated with opaque-white, slightly waxy-looking growths, varying in size from a small hazelnut to a pea; a few smaller.

Examined microscopically, these are found to be composed of cells about the size of white blood corpuscles, imbedded in a delicate, small-meshed reticulum of connective tissue—evidently, therefore, lymphomatous in structure.

The whole of the peritoneum, great omentum, mesentery, &c., were infiltrated with similar granules and small nodules, or exhibited thickened patches, having an identical structure. (See further, "Medical *Post-mortem* Records," vol. I, 1875, pp. 517-18.)

69. A spleen with a large cyst, occupying the whole of the lower two-thirds of its outer surface. "When the cyst was cut into, about twenty-eight ounces of dark-brown fluid escaped. The outer walls of the cyst were adherent to the diaphragm and adjacent parts." The spleen is enlarged, very soft, and spongy. The cyst-like formation consists of the thinned and expanded portion of the capsule of the organ which normally invested the lower two-thirds of its outer surface. A large cavity, containing the fluid above described, seems to have formed between the capsule and splenic parenchyma. Stretching between these parts (as viewed from the interior) are delicate bands of newly-formed connective tissue, and minute capillary vessels, while a semi-stratified layer of coagulated blood, varying from two to four lines in thickness, is met with immediately in contact with the latter (splenic substance.) The pseudo-cyst seems, therefore, to have been produced by a considerable blood extravasation (perhaps from injury), at the surface of the spleen, collecting just beneath the capsule, and detaching the latter over a limited space. From some cause inflammation has succeeded the extravasation. Partial organisation of the effused material has taken place, and, at the same time, a portion of the blood has formed a stratified deposit, the remaining fluid portion being evacuated by the opening made into the cyst-wall (stretched capsule) at the *post-mortem* examination. The dark colour of the fluid which then "escaped" seems to confirm the view taken of the mode of formation of this very rare lesion—*i.e.*, from blood extravasation.—From a native prisoner (male) who died in the Presidency Jail from diarrhoea. (*Presented by* Dr. C. H. Joubert, Calcutta.)

70. "A spleen enlarged to twice its normal bulk, having four fissures on its anterior margin, varying from a half to two inches in depth. There is another fissure on the posterior margin upwards of three and a half inches in length." (Ewart.)

71. "A spleen having three small fissures in its anterior margin and a similar number in its posterior convex border, with two on its

inferior surface, where there is a "button-shaped supplementary spleen." (Ewart.)

72. A congenitally multilobulated spleen. It consists of seven distinct and separate lobules or nodules of irregular shape and size, all bound together by loose connective tissue and peritoneum. It weighs *en masse* $15\frac{1}{2}$ ounces.

From a native female, aged 18, who died from a malignant tumour (sarcoma) of the back.

There was also congenital malformation of the heart in this case. (See further, "Medical *Post-mortem* Records," vol. III, 1879, pp. 384-85.)

73. An accessory spleen or spleniculus, of globular shape, and the size of a nutmeg, attached by a fold of thickened peritoneum to the lower end of the hilum of a chronically hypertrophied spleen. (*Presented by* Assistant Surgeon Tamceez Khan.)

74. A spleniculus or accessory spleen, weighing an ounce and a half, found on *post-mortem* examination of the body of a young Hindu girl aged 18, who died from anæmia and exhaustion consequent upon a long continuance of chronic intermittent fever with splenic hypertrophy. The spleen itself was very large, dark, and soft. It weighed 2lb 7ozs.

This accessory organ was attached by a fold of peritoneum to the hilum of the spleen proper, at about its centre.

75. Two small accessory spleens (spleniuli), one, the size of a pigeon's egg, the other, of a nutmeg, found near the hilum of the spleen proper, and connected with the same by means of a fold of peritoneum thickly infiltrated with fat.

The subject was a Chinese (male), aged 35, who died of chronic dysentery.

76. Spleen of the Ourang-Utan, containing several masses of tubercular deposit." (Allan Webb; *Pathologia Indica*, No. 342, p. 143.) (*Presented by* Dr. F. Oxley of Singapore.)

77. "Larynx and trachea, with enlargement of the thyroid body. Each lateral lobe is elongated to about three inches, and encroaches upon the œsophagus to a slight extent. These are joined in front by two nodular enlargements slightly constricted in the mesial line by a firm and strong band of fibrous tissue. A transverse section of the left lateral lobe shows that the growth consists of cysts with laminated walls, containing solid contents." (Ewart.)

78. "Larynx and upper part of the trachea and hypertrophied thyroid body. The two lateral lobes are as large as hen's eggs, connected by the central lobe, almost the size of a pigeon's egg, from which a process is given off," which, ascending upwards, is united to the hyoid bone by a short band of fibrous tissue.

79. Hypertrophied right lobe of the thyroid gland, from a native female, aged 50. It is seen, on section, to be highly cystic. The cysts vary in size from a pea to a hazelnut, and are occupied by brownish, gelatinous-looking material (colloid). Their walls are thick and fibrous, and in parts calcified; as also are portions of the capsule of the gland.

80. Fibroid hypertrophy of the thyroid gland. Both lobes and the isthmus are enlarged;—each of the former to the size of a small orange, the latter is as large as a nutmeg. On section chiefly fibroid thickening of the gland-parenchyma is found, interspersed with cysts of varying calibre, but mostly small, and filled with mucoid or sanguineous fluid. The cartilaginous portion of the upper half of the trachea is embraced by the hypertrophied thyroid body.—Taken from a native woman, aged 50, who died of cholera.
81. “Larynx, portion of the trachea and œsophagus, and enlarged thyroid gland of an old woman. The walls of the small cysts, of which it is mainly constituted, are hard and cartilaginous in consistency. The lateral lobes are about four inches long and an inch and a half in thickness. The central lobe is proportionately enlarged.” (Ewart.)

On microscopical examination, there is found general hypertrophy of the proper structure of the gland, together with mucoid or colloid advancing degeneration. The natural loculi are expanded, and, by atrophy of the intervening fibrous septa, and coalescence of two or more such spaces, cyst-like cavities are formed, thickly crowded with granular, pigmented cells; or, the latter gradually disappearing, their place is occupied by soft, flickering, colloid or mucoid material. In parts the septa, instead of being atrophied, show considerable thickening and opacity, with sparing calcareous infiltration.—J. F. P. McC.

82. “A serous cyst in the thyroid body, the contents of which had undergone purulent degeneration. The cavity measures an inch in its longest, and three-quarters of an inch in its shortest, diameter. The cyst is centrically situated. The internal surface of its wall is tolerably smooth in some parts, and more or less puckered and irregular in others.” (Ewart.)
83. A very large thyroid tumour (bronchocele), involving both lobes and isthmus of the gland, and forming a dumb-bell-shaped mass, placed transversely across the trachea, embracing it, the pharynx, and œsophagus, and almost completely filling the space between the chin and the episternal notch. The right lobe is more developed than the left. The structure is that usual to such growths,—a cystic dilatation of the normal ampullæ or lobules of the gland, which are filled with mucoid or colloid material for the most part, but, in certain situations, show (under the microscope) cheesy, granular, fatty contents, and in others, blood; the latter recognised by the presence of deep-yellow coloured pigment and fragmentary corpuscles. The pseudocysts vary much in size; some are quite microscopic, others readily recognised by the unaided eye (as seen in the section which has been made through the right lobe). The fibrous septa, connecting these together, exhibit in parts mucoid or fatty infiltration, in others are hard, rigid, and calcified. A capsule of fibrous tissue, thus partially calcified, surrounds or invests the entire growth.—From a native female who died in hospital.
84. A specimen of hypertrophy of the thyroid gland (bronchocele) which proved fatal by inducing sudden spasm of the glottis,

owing to pressure on the reeurrent laryngeal nerves. There was no œdema of the glottis, or any other morbid condition of the interior of the larynx. The lateral lobes of the gland form two large kidney-shaped growths on either side of the larynx and trachea, the left being the larger. The isthmus is also hypertrophied, measures about $1" \times \frac{1}{2}"$. Between these structures the windpipe, from the thyroid cartilage to within two inches of the bifurcation of the trachea, is tightly embraced. The outline of the bronchocele is much lobulated; on section, it is highly vascular, and presents a kind of minutely honeycombed appearance, produced by a series of small cells or cyst-spaces, occupied by a soft, flickering, jelly-like material. These constitute smaller and larger lobules, separated by bands of fibrous-looking tissue.

Microscopic examination confirms the condition of structure above described. Larger and smaller mucoid spaces or spheres are found, having at their margins large, nucleated, granular cells, but the rest of the sphere filled with jelly-like rippled material, with only here and there the remains of degenerate stellate and round cells. These spheres or spaces are separated by delicate connective tissue, supporting blood vessels of considerable size.

History. Miss A. S. ———, aged 18, was admitted into the General Hospital with this growth in the neck, and stated that it had existed for six months. Was small at first, but has gradually increased to present size. "It was soft to the feel, but no bruit could be heard in it. It compressed the trachea, and the breathing was accompanied with a peculiar whistling sound. The patient was subject to paroxysmal attacks of dyspnœa. On the morning of the fourth day after admission, during one of these sudden attacks, she died. There was no difficulty whatever in swallowing. No abnormal cardiac murmurs, &c. Death was caused from spasm of the glottis, due to pressure on the recurrent laryngeal nerves by the tumour." (*Presented by Dr. F. C. Nicholson, General Hospital, Calcutta.*)

85. The supra-renal bodies from a native male patient who died of pneumonia. The left gland is hypertrophied, and its capsule here and there marked by small, milk-white spots of thickening. The right is healthy. There was no cutaneous discolouration or any other indication of "Morbus Addisonii."

86. Supra-renal glands from a case of suspected Morbus Addisonii, an East Indian woman, aged 59, who died in hospital of chronic dysentery.

Both organs are somewhat small, the right flattened, the left puckered and contracted. Their capsules are opaque and thickened. On section the proper gland-structure appears to be atrophied. No morbid growth or deposit is observed. Each supra-renal body weighs one drachm.

Examined microscopically, sections (both longitudinal and transverse) from these bodies show (1) thickening of the fibro-cellular capsule, chiefly by homologous, well-formed connective or fibrous tissue, but, in parts, by a nuclear proliferation, which, however, is only found in some of the sections, is quite absent in others. (2) The proper gland-structure, both cortical and medullary, exhibits no new growth or infiltration; the vertically placed columns of the former present the usual yellowish-coloured epithelial cells with large single nuclei, only much infiltrated with fat; and a good deal

of free fat (in globules and molecules) lies between the columns, in the fibrous dissepiments which divide them. In parts this proper gland-tissue has quite broken down, spaces being found occupied by a molecular fatty *débris* only, the result evidently of disintegration of the epithelial elements. (3) Almost similar changes are detected in the medullary portion. There is no new or specific growth; no amyloid or caseous degeneration. The morbid conditions discovered consist of fibroid thickening of the capsules of these glands, puckering and contraction of the latter (especially of the left), combined with fatty infiltration and atrophy. (*See further, "Medical Post-mortem Records,"* vol. II, 1876, pp. 263-64.)

87. Cancerous (melanotic) infiltration of the supra-renal bodies. The deposits are isolated, and well defined, appear to affect only the fibrous capsules of these organs, the proper gland-structure remaining unimplicated.

From a case of general melanosis, an East Indian male, aged 44. The brain, lungs, liver, bones, &c., were all similarly affected. (*See* preps. Nos. 45, Series VIII; 342, Series IX, &c.)

The structure of the deposits is that of true encephaloid carcinoma, only modified by dark, granular, pigmentary infiltration of both stroma and cells. (*"Medical Post-mortem Records,"* vol. I, 1873, p. 16.)

88. Tubercle of the lymph glands. The specimen shows a group of enlarged inguinal glands, the largest about the size of a duck's egg,—taken from a case of general tuberculosis,—an East Indian (male,) aged 35.

On section the glands are seen to be diffusely infiltrated with yellowish-white tuberculous deposit, most marked in the peripheral or cortical portions. In parts it forms small caseous nodules, and in others shows incipient softening. Besides these glands, the mesenteric glands, the liver, spleen, kidneys, and lungs, were thickly infiltrated with tubercular granules.

89. Strumous enlargement of the deep cervical glands. The preparation shows a chain of these, from the right side of the neck, all of which are more or less indurated, cheesy, and of a pale-yellowish colour on section. The corresponding glands on the left side of the neck had ulcerated.

The lymph glands in the anterior mediastinum were also enlarged and caseous.

There was a family history of serofula. The patient, a West Indian (male), aged 22, a seaman, died from acute general tuberculosis. (*See further, "Surgical Post-mortem Records,"* vol. I, 1875, pp. 191-92.)

90. A group of enlarged lymph glands from the anterior mediastinum in a case of lymphadenoma (Hodgkin's disease). The largest, the size of a walnut, was situated just above the arch of the aorta, a little to the left of the median line. They are all soft in consistency, milky-white in colour, or partially cheesy (as seen on section), matted together by the thickened and infiltrated cellular and connective tissue of the mediastinum and surrounding parts (pleura, pericardium &c.). The structure of this infiltrating material is purely lymphomatous, and has spread, by direct continuity of tissue, from the glands to the adjacent

parts. Both pleuræ, the lungs, the diaphragm, &c., were all similarly affected.—From a native female aged 25. (*See further, "Medical Post-mortem Records," vol. I, 1875, pp. 517-18.*)

91. A cancerous tumour, the size of an orange, removed from the arm. It is lobulated in outline, pretty firm on section, and is then seen to be mapped out into alveolar-like spaces by white fibrous tissue, the centres of the spaces being occupied by softer brownish material. At the centre of the tumour its substance is especially soft, and partially cheesy. Microscopically, the structure is partly adenoid,—consisting of small, round, nucleated cells in a fine-meshed stroma, is partly composed of large collections of rounded epithelial cells with distinct nuclei; and the transformation of the lymphoid into epithelioid (cancerous) cells can be traced quite readily in some of the sections made. There is no history, but, apparently, this is a large secondary cancerous growth affecting certain of the subcutaneous lymphatic glands of the arm.
92. "Section of brain-like cancer of the inguinal glands. The growth had begun to fungate through the skin of the groin, as demonstrated in the preparation." (Ewart.) This is a broadly lobulated growth, the size of one's fist. The gradual transformation of the lymphoid tissue (adenoid cells) into larger epithelial-looking cells, with the thickening of the intercellular fibrous tissue into stroma, is very distinctly exhibited in sections placed under the microscope.
93. Portions of a morbid growth (colloid carcinoma) found infiltrating the post-peritoneal connective tissue and lymphatic glands of the abdomen, surrounding the aorta and vena cava, and following the course of their branches (iliac and femoral) to the brim of the pelvis, and thence, beneath Poupart's ligament, into the thighs. In the last situations the inguinal glands were also much enlarged and morbidly infiltrated.

Sections of this growth, examined under the microscope, reveal the structure of true colloid cancer. Polymorphous epithelial-like cells with distinct single or multiple nuclei are found in large numbers, imbedded in the meshes of a very delicate, soft, connective-tissue stroma. In other parts, chiefly jelly-like colloid material fills these spaces, the cells being very few in number, granular, and broken down. A colloid infiltration of the cells themselves is not very distinctly seen, but a large amount of this material infiltrates the whole structure of the new growth. Further, much fatty or adipose tissue surrounds the lobulated masses, and, along the connective tissue dissepiments of the same, numbers of small, round, growing cells are observed, clearly indicating an extension, by infiltration, to the surrounding structures. In the portions removed from each groin, the normal gland (lymphoid) elements of the part are largely combined with the new growth, and are seen to be in active proliferation.

From a European female, aged 65, who died in hospital. ("Medical Post-mortem Records," vol. I, 1875, pp. 939-40.)

94. The lumbar and post-peritoneal lymphatic glands of the abdomen, showing extensive infiltration with soft cancer. Some of the former are enlarged to the size of a potato, and exhibit, under the microscope, an active or rapid proliferation of the proper

lymphoid or adenoid structure, with contemporaneous formation of spaces, in which a soft mucoid-looking stroma with epithelial elements imbedded in it are to be found.

The lungs and liver were similarly affected.—From a case of primary encephaloid carcinoma of the testicle, a European patient, aged 43.

95. An enlarged and infiltrated lumbar gland, from a case of encephaloid carcinoma of the femur, a native lad, aged 15, upon whom the operation of amputation at the hip-joint was performed, but who died from a recurrence of the growth in the pelvic glands, lungs, &c. (*"Surgical Post-mortem Records,"* vol. I, 1877, pp. 397-98.)

96. A malignant tumour (sarcoma) removed from the right axillary region of a native male, aged 35.

It is ovoid in shape, five inches in length, four and a half inches in breadth, and about two and a half inches in thickness. Has no distinct capsule, but is surrounded by a quantity of loose cellular tissue, most of which has now been dissected off. Is soft and succulent in consistency. Pale-white in colour. The surface and sections broadly lobulated and smooth.

Under the microscope the structure is seen to consist of a very dense cellular tissue, with a very small quantity of granular or faintly fibrillated inter-cellular substance. The cells are more or less round; about the size of pus or mucus corpuscles, with solitary large nuclei. Larger and smaller blood-vessels are seen plentifully distributed throughout the growth, tunnelling it out in various directions; their walls very delicate, and intimately associated with the cellular structure of the tumour-tissue. They are unusually distinct from being filled with coloured blood corpuscles. Portions of the growth also show extravasations of blood, and numbers of pigmented cells. Lastly, in parts, the growth has a firmer consistency, a more distinctly fibrillated structure, and shows a large number of lymphoid cells, rendering it highly probable that the tumour had its primary seat in the axillary glands. The main bulk of the growth, however, is truly sarcomatous;—the tumour is a "small round-celled sarcoma."

97. A sarcomatous tumour removed from the right side of the neck of a native lad, aged 16. It was of about ten months' duration, and very painful. The growth forms an irregular-shaped, nodulated mass, which, on section, has a yellowish-white homogeneous appearance, like that of a raw potato. Its glandular origin is readily recognisable. The consistency is somewhat soft.

Under the microscope the structure consists of lymphoid tissue,—small round nucleated cells, and a delicate small-meshed reticulum of connective tissue, but the cell-elements are greatly in excess, and, even in brushed out sections, greatly preponderate over the stroma, which indeed in parts seems to be quite wanting; and with the round cells are some elongated and spindle-shaped. The tumour-mass is formed entirely by a series of altered lymph-glands fused together, and involving the surrounding tissues to a limited extent.

With this tumour is preserved a chain of lymphatic glands from the left side of the neck, found similarly affected on *post-mortem* examination. These have an almost identical structure, though

the purely lymphoid characteristics are more pronounced than in the "tumour," and numbers of small circumscribed abscesses—disintegrating and suppurating gland-tissue—are to be seen in sections placed under the microscope. Such suppuration was quite probably pyæmic,—the patient dying from this cause (pyæmia.) (See "Surgical *Post-mortem* Records," vol. I, 1879, pp. 581-82.) (*Presented by* Professor K. McLeod.)

98. "Syphilitic bubo." An indurated and enlarged lymphatic gland, dissected out of the groin of a native (male) patient, aged 40, suffering from a true, primary, Hunterian sore (hard chancre). (*Presented by* Dr. E. Lawrie.)
99. Pigmented inguinal and axillary glands, from a "tattooed" New Zealander (Maori), a seaman, aged 25, who died in hospital. These glands all show dark-bluish granular pigmentation of their proper (adenoid) structure. The deposit is both extra and intra-cellular; is specially abundant in the peripheral follicles, while the central portions of each gland are mostly free of infiltration, and quite normal-looking. There is also a bluish staining of the endothelium of the lymphatic vessels, and of the fat accumulated in and near the gland-capsules. The pigment matter is probably gunpowder.
100. "Heart, lungs, and thymus from an infant three days' old." (Ewart.)
101. "Persistent thymus gland, from a lad of 18 or 19, who died from rupture of an enlarged spleen. No other organs were diseased." (Colles.) (*Presented by* Dr. J. M. Coates, Central Jail, Hazareebagh.)
102. "A very good specimen of persistent thymus gland, from a child about nine years old." The gland is deeply lobulated; consists of two lateral portions—the left being the larger—which overlap the front of the trachea at its bifurcation, and then descend in front of the heart, which is almost hidden by them. A little loose cellular tissue connects the gland with the pericardium. (*Presented by* Professor C. O. Woodford.)
103. Pseudo-cystic hypertrophy of the pineal gland. Found on *post-mortem* examination of the brain of a native female, aged 20, who died of pneumonia after child-birth.

This condition appears to have been brought about by some form of degenerative softening succeeding hypertrophy of the gland, for it is enlarged to about three times its normal size.

On scraping the walls of the pseudo-cyst,—which are here and there raised into little papilliform excrescences,—nothing abnormal in structure can be detected by the microscope. A connective tissue basis-substance is seen, forming a close-meshed reticulum, in which are imbedded larger and smaller sized round, granular, mono-nucleated cells, and also a large number of irregular-shaped or rounded "corpora amylacea"—a structure, in fact, closely resembling the normal composition of this gland.

SERIES XI.

INJURIES AND DISEASES OF THE KIDNEYS
AND URETERS.

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1.—DILATATION, 52, 91, 123, 124.

2.—IMPACTION OF CALCULI, 91, 98, 123, 125.

1. “Ruptured kidney. The organ is much lacerated on its concave border near the hilum. The pelvis and ureter are also injured. The accident was caused by a blow from the fore-foot of a horse at 5 P.M. on the 25th October 1847, the patient being a native of Debrughur. He passed bloody urine and clots of blood *per anum*. He died at 10 A.M. on the 27th, forty-one hours after the receipt of the injury.

At the *post-mortem* there were found evidences of general peritonitis; stomach and intestines were uninjured. The ascending colon, at its junction with the transverse colon, was pressed forward by a hard firm tumour, which, on raising the gut, was found to be a mass of coagulated blood inclosed in a sort of bag formed of false membrane. This mass, the size of two clenched fists, escaped from the kidney, which was found embedded in its centre. The organ was extensively ruptured, the upper fourth being entirely detached, was separated to the extent of half an inch. The effused blood escaped from this part. Passing behind the peritoneum, it passed into the cellular membrane in front of the large vessels and nerves to the opposite side; downwards it passed as far as Poupart's ligament behind the transverse or iliac fascia.” (*Presented by W. J. Long, Esq.*)

2. Transfixing wound of the lower third of the left kidney. The direction of the wound is from the convex border, almost transversely to the lower part of the hilum. (A piece of tale has been placed in the same.) “The orifices of the perforation are smooth, and look as if the injury had been inflicted by a sharp instrument.” (Ewart.) No history.
3. Rupture of the left kidney. The organ is shrunken and small. The laceration is at its upper end,—a ragged wound about two inches in length and a third of an inch deep. It reaches the superior extremity of the hilum. From Ram Lall, a Hindu, who fell off a tamarind-tree, a height of from 20 to 30 feet, and sustained, besides the above injury, a rupture of the spleen (*see* prep. No. 5, Series X) and a compound fracture of both bones of the left forearm.
4. Right kidney showing several transverse and oblique lacerations of its substance, situated on its under surface and outer margin. One of these, an inch in length, reaches the hilum. From a native who was run over by a buggy in the streets. The liver was also ruptured (*see* prep. No. 263, Series IX), and all the ribs of the right side of the thorax fractured.

5. Rupture of the left kidney. The laceration is situated on the anterior surface, a little below the centre of the organ. It is an inch and a half in length and from a fourth to a third of an inch in depth; extends transversely from the posterior or convex border to the hilum. From a native (Mahomedan), aged 24, who fell from the deck into the hold of a country-boat. "He apparently died from shock half an hour after the accident."
(Presented by Dr. S. C. Mackenzie, Police-Surgeon.)
6. "Enormously hypertrophied kidneys, which are three or four times in excess of their normal size. The increase is exhibited equally in the cortical and medullary portions of the organs." (Ewart.)
No history.
7. The kidneys of a Negro who suffered from diabetes and died in hospital of pleuro-pneumonia. Both are large; the surfaces smooth, but dotted over irregularly with very small serous cysts. The cortical and pyramidal portions are about equally hypertrophied, and hyperæmic (in the fresh state). The Malpighian capsules were large and prominent. There is no material alteration in the secreting structure except that of overgrowth,—the result of increased functional activity, in illustration of which these organs have been preserved.
8. Another similar specimen. Hypertrophy of the kidneys in consequence of increased functional activity in diabetes. The right weighs $8\frac{1}{2}$, the left 9 ounces. The renal substance was dark, congested, and juicy; the structure generally somewhat coarse-looking, but otherwise healthy.—From an East Indian (male), aged 37. ("Medical Post-mortem Records," vol. II, 1876, p. 48.)
9. The kidneys of a prisoner who died in the Presidency Jail from chronic dysentery. The left kidney is extremely atrophied; the secreting structure has almost entirely disappeared; the pelvis is expanded, and the commencement of the ureter about three times its natural diameter. The right kidney shows compensatory hypertrophy. Its blood-vessels are enlarged, and the ureter a good deal dilated. It weighs $5\frac{3}{4}$ ounces; the left (atrophied) kidney only 7 drachms.
10. Hypertrophy of the left kidney with atrophy of the right. The former is large, the capsule thickened, the surfaces coarsely granular. In the fresh condition the organ was darkly congested, and the Malpighian tufts were prominent, and of a deep-red colour. The right kidney is very small. Its capsule thickened and leathery; the secreting structure greatly reduced and disorganised; the pelvis dilated. The compensatory hypertrophy of one organ in consequence of atrophy of the other is well illustrated in this specimen.—From a European (male), aged 59.
11. Two kidneys.—The right apparently congenitally atrophied, and weighing only two ounces. It is about two and a half inches long, an inch and a half wide, and half an inch in thickness. The left kidney shows complementary or compensatory hypertrophy. Its structure is somewhat coarse-looking, but otherwise healthy. Weight 6 ounces.—From a European (male), aged 48,

who died from cerebral apoplexy. ("Medical *Post-mortem* Records," vol. II, 1877, pp. 465-66).

12. "A remarkably atrophied kidney from a subject in the dissecting-room. The whole of the secreting and medullary part has disappeared, and the relics now consist of a shrunk pelvis, from which is seen springing an atrophied ureter." (Ewart.) (*Presented by* W. Harrison, Esq.)
13. "Atrophy of the right kidney, from a patient in the College Hospital. The organ is about one-third of its normal dimensions. The left kidney exhibits compensatory hypertrophy." (Ewart.) (*Presented by* Professor F. J. Moutat.)
14. "The left kidney, from a patient who suffered from enteritis."—The kidney is greatly atrophied. It is about the size of a walnut, but flattened. The surfaces are slightly nodulated. The capsule is thickened in parts; in others so blended with the secreting structure as to be almost indistinguishable from it. On section a fibroid appearance is presented owing to atrophy of the proper renal structure, and the presence of broad bands of fibrous tissue passing upwards into the same from the pelvis, which is small and contracted. Much yellow fat occupies the calyces, and extends into the kidney parenchyma, taking the place of the secreting structure. The latter, in fact, can only be demonstrated at the periphery, and here has a thickness of from one-third to a quarter of an inch,—the cortical and pyramidal portions being blended together.

Under the microscope sections taken from this part exhibit an excessive development of well-formed connective tissue with numerous nuclei, displacing and substituting the secreting structure. The growth appears to be thickest just beneath the capsule, and to proceed centripetally. The tubuli uriniferi are small, contracted, and shrunk; the Malpighian tufts have almost completely disappeared. The epithelium is granular generally, but in parts quite normal. A few small cysts, with opaque fatty contents, are also discerned. (*Presented by* Assistant Surgeon Gopal Chunder Roy, Howrah.)

15. Kidneys from a native male, aged 18, who was admitted into hospital in a moribund condition, and died from pneumonia of both lungs. The left kidney is remarkably atrophied, and weighs only three-fourths of an ounce. The right is larger by about five times, but still also atrophied and granular; weighs $3\frac{1}{2}$ ounces.

The larger kidney, examined microscopically, shows considerable overgrowth of the intertubular connective tissue, both in the nucleated and fully formed type,—the former predominating. The arteries are large, and have thick walls. The secreting (lining) epithelium is in parts quite normal, in others is swollen, and presents a granular condition from fatty metamorphosis. Many of the uriniferous tubules are found wide and distended, or distorted; others empty. Here and there the Malpighian capsules are undergoing cystic transformation. In the left kidney a mere shell of secreting structure exists, the rest is formed by a dilated condition of the pelvis and calyces. The capsule is thickened and fibroid.

16. The kidneys, ureters, and urinary bladder of a native male, (Mahomedan), aged 50, who died from cirrhosis of the liver, &c.

The right kidney is quite rudimentary, but its ureter is well formed and pervious. It opens, however, *into the prostatic portion of the urethra*, and not into the bladder.

The left kidney shows compensatory hypertrophy. Its ureter is normal, and terminates, as usual, in the bladder. The latter thus presents only a single orifice at the base of the trigone, that of the left ureter; there is no corresponding opening on the right side.

The right kidney is represented by a glandular nodule, flattened from before backwards, and about the size and shape of a French bean.

A scraping from it, placed under the microscope, presents a few obsolete Malpighian capsules and uriniferous tubules, and consists almost entirely of highly nucleated connective tissue, with blood-vessels, and small lobules of fat. The ureter, however, is well formed, and the pelvis and calyces, though very rudimentary, are still recognisable.

This right kidney was found (surrounded by a good deal of adipose tissue) in the usual position, to the right of the vertebral column and beneath the liver. It received a small renal artery from the abdominal aorta, and two or three small renal veins emerged from it to join the vena cava (*see preparation*). The ureter, as above stated, opens into the prostatic portion of the urethra, immediately to the right of the veru montanum. It is pervious throughout, but, about an inch and a half from its renal origin, a small dark calculus, the size of a rice-grain, may be seen eneysted in its walls, leaving, however, the channel quite free. At the urethral end, the orifice of termination is as large as a crow-quill. The left kidney occupied the usual position. The bladder is quite healthy. The left kidney weighs $6\frac{1}{2}$ ounces; the right one draehm. (*See further, "Medical Post-mortem Records," vol. III, 1880, pp. 573-74.*)

17. Senile atrophy of the kidneys,—the right weighing $3\frac{1}{2}$ ounces, the left 4 ounces. Apart from a slight roughening of the surfaces and a comparatively greater reduction of the cortical than the pyramidal structure, there is nothing abnormal in the condition of these organs.—From a native male, aged 45.

18. Senile atrophy of the kidneys. From a native female, aged 60, who died of pneumonia. Both organs are small. The cortical and pyramidal portions in each appear to have undergone about equal and proportionate shrinking. The capsules are a little thickened, and do not strip easily. The right kidney weighs 3, and the left $3\frac{1}{2}$ ounces.

19. Senile atrophy of the kidneys. Both organs are small. The capsules slightly adherent. The secreting structure, both cortical and medullary, is seen on section to be reduced and shrunken. The right weighs $3\frac{1}{4}$, and the left $3\frac{1}{2}$ ounces.—From a native male, aged about 70, brought into hospital moribund,—apparently from chronic starvation and general senile decay.

20. Senile atrophy of the kidneys.—From a native male, aged 55, who died from internal strangulation of the bowels. Both

organs are small, their surfaces smooth, but scattered over with a few minute superficial cysts. The capsules peel easily. On section the renal structure is found healthy, though everywhere reduced or shrunken.

21. Senile atrophy of the kidneys. Both organs are small; the surfaces are smooth, but show a few simple serous cysts, and some are found more deeply situated on section. The secreting structure is firm, but atrophied,—the cortical and pyramidal portions participating about equally in this change.—From a native male, aged 60, who died in hospital from remittent fever.
22. Specimens of large, heavy, passively congested and hypertrophied kidneys, associated with long-standing obstructive heart disease, and great dilatation of the right chambers. When fresh, venous blood dripped freely from them on incision. The surfaces are smooth; the capsules stripped easily. The lungs presented scattered patches of blood extravasation (apoplexies); the liver was “nutmeggy.”
23. Kidneys from a case of cholera. A native female, aged 28, who died from a second attack of the disease, having recovered from the first, about four months previously.

Sections from these kidneys under the microscope show (1) much pigmentation,—the pigment being dark and in the form of minute dots or granules scattered irregularly along the course, and within the uriniferous tubules. This pigmentation seems to be of some standing, and probably represents the remains of extensive ecchymosis during the intense congestion of the first attack of cholera. (2) Recent hæmorrhage into the Malpighian tufts, and along the sides of the convoluted tubes; the walls of the renal arterioles are themselves stained. Both the above conditions most marked in the cortical structure. (3) Great swelling of the intratubular epithelium. These cells (epithelial) are enlarged to two or three times their normal size, their protoplasm highly granular (“cloudy swelling”), and at the same time presenting in many cells a minute dotted yellowish transformation (? colloid change). The tubules, further, in many instances, are completely blocked, partly owing to intumescence of the epithelia, partly to shredding of the same, with denudation of the basement or lining membrane. The epithelial changes appear to be most marked in the pyramidal structure.

24. Kidneys from a fatal case of puerperal eclampsia,—a native female, aged 19, a primipara. Both are enlarged, and, on section, the pelvis and calyces are seen considerably dilated or expanded, and their lining membrane much injected and vascular. The latter is probably attributable to the pressure exercised by the gravid uterus upon the ureters. The pyramidal structure showed a very dark-purple congested condition in the recent state; the cortex paler, fatty-looking, and ineipiently atrophied. Much opaque, milky-looking fluid exuded from the papillæ on pressure.

- On microscopic examination sections from these kidneys displayed all the characters of ineipient tubal nephritis. The uriniferous tubules large, dilated, contorted, and in parts ruptured. Their epithelial lining swollen, the cells large, full of minute dark granules, and in parts proliferating. Some fatty metamorphosis of the tubular contents is also visible. No marked intertubular change, except a little abnormal nuclear proliferation around the walls of the small arteries in the cortex.

The patient was attacked with convulsions (eclampsia) during labour, and died, comatose, forty hours after delivery. The urine was highly albuminous, and very scanty. (*See further, "Obstetrical Post-mortem Records,"* vol. I, 1877, p p. 367-68.)

25. Kidneys from a native male, aged 32, who died in the reaction stage of cholera. The organs exhibit very characteristic appearances. The pyramidal structure is intensely ecchymosed, the cones dark-red and prominent (in the fresh state); the cortical structure is less vascular, of a pinkish-white colour from intratubular desquamation of epithelium.

The latter is confirmed on microscopic examination. The tubules are found dilated, distorted, and filled with swollen, granular, partly or wholly detached epithelium. The Malpighian tufts are enlarged, their capillary vessels apparently engorged; free blood cells—from rupture, and extravasation—are seen within the capsules.

Intense congestion with intratubular desquamation and obstruction are the principal morbid changes displayed by these kidneys.

26. Kidneys showing, very characteristically, the morbid anatomy of acute desquamative nephritis, such as is commonly met with when death occurs in the reaction stage of cholera. The patient, a European seaman, aged 25, was admitted into hospital on the 23rd May 1879, at 2 A.M., and died on the 29th, at 11-45 P.M. During the last four days preceding death the urinary secretion was totally and entirely suppressed.

The kidneys are large and swollen; the right weighs 6 and the left 8 ounces. The capsules stripped easily. The surfaces are for the most part smooth. On incision, in the fresh state, much fluid dark blood came away freely from the renal parenchyma.

The pyramidal structure presented a highly congested appearance; the cones of the same being prominent, and contrasting markedly with the cortical structure, which was pale and somewhat anæmic looking,—had a streaky opaque appearance from intratubular epithelial desquamation. The papillæ, on pressure, exuded thick, milky-looking fluid or juice. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 163-64.)

27. The kidneys of a native male (Hindoo), aged 40, who was admitted into hospital suffering from polyuria or diabetes insipidus. He used to pass from 50 to 180 ounces of urine in the twenty-four hours. It was clear and limpid, like distilled water; free from sugar, albumen, bile, phosphates, and chlorides; and of a specific gravity of from 1001-2. He died (while improving under treatment) from a sudden attack of cholera.

The kidneys, in the fresh state, were of about normal size, but darkly congested, soft, and juicy; dark blood dripped freely from the incised surfaces. The capsules stripped with much difficulty, tearing away the kidney parenchyma. The cortical structure is a little reduced and fatty-looking,—has, in both organs, a streaky yellowish-white colour; the pyramids are large and dark-red. No amyloid change.

On microscopic examination the secreting structure is found in a state of catarrhal inflammation,—the epithelium lining the tubules swollen and granular, and much detached in parts, so as to form aggregations of three, four, or more coherent cells, or long cylindrical casts of the same. The Malpighian tufts are large and dilated.

(See further, “*Medical Post-mortem Records*,” vol. II, 1878, pp. 863-64.)

28. Kidneys somewhat swollen and enlarged, and presenting a very remarkable purpuric condition, the surfaces of both organs being covered with innumerable, minute, dark-purple, points of blood extravasation and pigmentation. These are not larger than a pin’s head, and very distinctly circumscribed. The renal parenchyma is seen, on section, to be similarly affected,—especially the cortical portion.

In microscopic sections this minutely ecchymosed condition is seen to be chiefly confined to the superficial layers of the cortex, and particularly to the surfaces of the kidneys. Dark granular pigment matter (blood) is found to compose the irregularly rounded dots scattered over these portions of the renal tissue, and also fills some of the tubules, giving them a dark-red appearance. The intratubular epithelium in both the cortex and pyramids is affected, particularly in the former,—swollen, granular, and shreddy,—producing distension, distortion, and blocking of numerous tubules, and is found generally loosened from the basement membrane. No marked intertubular change. (Nephritis hæmorrhagica.)

From a native female, who died from carcinoma of the rectum, &c.

29. Kidneys showing a remarkable purpuric condition. Their surfaces are thickly covered with minute blood-extravasations or ecchymoses, about the size of pins’ heads, and these are seen to extend also into the cortical structure for a considerable depth, as seen on section.

From a native female, aged 20, who died of chronic dysentery. She was much emaciated and anæmic, but there were no signs or symptoms of either purpura or scurvy.

Sections from these kidneys, examined microscopically, exhibit no alteration in the secreting structure. The ecchymoses are almost entirely confined to the surface, in connection with the stellate plexuses of veins here situated. Those affecting the deeper parenchyma are also chiefly limited to the upper strata of the cortex, being here associated with the interlobular veins. In several sections these veins appear to be almost completely thrombosed, and dilated, at irregular intervals, to two or three times their normal calibre, so as to present a somewhat moniliform appearance. (“*Medical Post-mortem Records*,” vol. II, 1878, pp. 725-26.)

30. Large white kidneys (tubal nephritis) of Bright. Both organs are increased in size and weight. Have a pale, anæmic, waxy-looking appearance. The cortical structure is increased. “The patient had all the symptoms of uræmia, and the urine passed by him was albuminous.” (*Presented by Dr. Ewart.*)

31. “Large white kidney of Bright. From a patient named Udoito, aged 22, a washerman by trade. He was an habitual rum-drinker. Had ascites and anasæra of the lower extremities.” The kidneys are somewhat enlarged, their surfaces smooth, and

the one that has been incised shows a pale-yellowish anæmic condition, with disproportionate hypertrophy of the cortical portion.

32. Tubal nephritis. Large white kidneys, from a case of Morbus Brightii,—a young native female, admitted into hospital with general anasarca and albuminuria. The organs are large, their surfaces smooth, though congenitally lobulated. On section, pale and anæmic. The cortical structure is hypertrophied and fatty.

33. Large mottled white kidneys, showing, also, amyloid or albuminoid degeneration, and giving a characteristic reaction with solution of iodine.

From a native male patient, aged 50, who died from uræmia. There was anasarca of the lower extremities, and a highly albuminous urine.

34. Large mottled white kidneys (tubular nephritis). From a native lad, aged 17. Both organs are large, and their surfaces smooth. On section the renal parenchyma presents a pale, anæmic appearance, and the cortical structure is hypertrophied.

The patient was admitted with ascites and œdema of the lower extremities. “About two months ago first noticed puffiness of the face and hands, since which period the œdema has gradually become general, and the abdomen has filled with fluid.

On the evening of admission paracentesis abdominis was performed, and about 168 ounces of pale serous fluid removed. This gave the boy considerable relief. Next morning he complained of diffuse pain all over the abdomen; was troubled with incessant vomiting; and, in this miserable condition, remained for two days, and at last died quite exhausted from the (acute) peritonitis. (*See further, “Medical Post-mortem Records,” vol. I, 1874, pp. 205-6.*) (*Presented by Professor Chuckerbutty.*)

35. Kidneys large, mottled, and white,—tubular nephritis, showing also amyloid infiltration.—From a native male, aged 23, who died from Morbus Brightii (acute albuminuria). (*Presented by Professor Norman Chevers.*)

36. Large white kidneys. Both are abnormally lobulated (congenital). The capsules strip easily, and are thin and transparent. The surfaces are smooth, but mottled. The kidney substance also presents, on section, a remarkably mottled or marbled condition; the cortical structure is highly fatty; the pyramids dark-pinkish in colour (in the fresh state.)

Examined microscopically, the morbid histology of tubal nephritis is well marked. The tubuli uriniferi are seen enlarged, dilated to two or three times their normal calibre; the lining epithelium in a state of proliferation, and highly fatty. Granular fatty coats are also observed within some of the tubules; and, in parts, free fat in the intertubular tissue.

From a native (female), aged 30, who died in hospital of Morbus Brightii. (*“Medical Post-mortem Records,” vol. II, 1878, pp. 861-62.*)

37. Large white kidneys (tubular nephritis). Both are somewhat large. The capsules strip pretty easily. The surfaces are a little rough. On section the cortical structure is highly fatty, pale, and anæmic. The pyramidal structure of rosy-pink colour.

Weight of the right kidney $5\frac{3}{4}$ ounces, of the left 5 ounces.

On microscopic examination the following are the chief alterations in structure discovered. (1) Malpighian bodies large, with enormously dilated "tufts" and distended capsules. (2) Tubules distended, dilated, distorted,—filled with highly granular epithelial *débris*, consisting of granular and fatty matter with nuclei, and a few entire swollen epithelial cells. Large casts formed of this material are squeezed out of the tubules (and float free in the field) under the pressure of the covering glass. (3) No marked inter-tubular infiltration, but some thickening of the intertubular connective tissue in parts. (4) An aggregation of leucocytes and red blood corpuscles around, and only in the immediate vicinity of the Malpighian capsules, as if from transudation or emigration from the over-distended tufts of the same. The characters are, therefore, those of advanced "large white kidney" of Bright, with commencing contraction of the organ, due to hyperplasia and contraction of the intertubular connective tissue, independent of any nuclear proliferation in this situation.

From a native female, aged 22, who died of Morbus Brightii. ("Medical Post-mortem Records," vol. III, 1879, pp. 73-74.)

38. A highly lobulated, cirrhotic-looking, contracted kidney. The cortex is seen, on section, to be reduced to a mere line, the pyramids are large, and almost reach the surface. (*Presented by Professor Norman Chevers.*)
39. Small, contracted, and highly granular kidneys, from a native male patient (Hindu), aged 48, who was admitted into hospital with acute pericarditis, and "died suddenly from syncope the day after admission."
40. Very typical examples of granular contracted kidneys,—chronic Morbus Brightii. Both organs are greatly reduced in size. The capsules are much thickened, and peel with difficulty. The surfaces are remarkably granular, rough, and exhibit several small cysts. The cortical structure is seen (in the kidney that has been incised) to be greatly atrophied, forming a mere thin rim at the periphery of the organ. The pyramids are also shrunk and small, but not to so great a degree as the cortex.

The left ventricle of the heart was greatly hypertrophied (*see* prep. No. 53, Series VI).

41. Kidneys from a Hindu (male), aged 18, who was admitted into hospital in a moribund condition and died an hour after. There was great embarrassment of the breathing, and tumultuous heart's action. The kidneys are contracted, small, and distinctly granular. There is great disproportion between the cortical and pyramidal structures,—the former appearing as a mere rim, only a few lines in thickness. Both are well marked specimens of the "small, red, contracted" kidney of Bright, and are preserved in illustration of the rare (but occasional) occurrence of this form of kidney disease at such an early period of life.
42. Granular and contracted kidneys, showing also amyloid infiltration. They are small in size; the surfaces rough, and with numerous minute serous cysts. Here and there, irregularly, the Malpighian tufts and small arteries present a glistening

semi-transparent appearance from amyloid or albuminoid degeneration, and give the characteristic reaction with iodine.

The subject was a native male (Mahomedan) who died in hospital from Morbus Brightii and cirrhosis of the liver. The liver exhibited no amyloid change.

43. A preparation intended to illustrate the association of chronic Bright's disease with cardiac hypertrophy. The kidneys and heart are put up together. The former are most typically small, granular, and contracted—reduced to less than half their normal size. The heart shows great thickening of its muscular walls, particularly of the left ventricle. There is no valvular disease.

From a native male, aged 40, who died in hospital from uræmia.

44. Small, contracted, and granular kidneys,—chronic Morbus Brightii. They are firm and resistant on section. The cortical structure is greatly reduced; measures only from two to three lines in thickness. The surfaces of both kidneys are thickly covered with small serous cysts, varying in size from a pea to a sago-grain. Weight of the right $2\frac{1}{4}$ and of the left $3\frac{1}{4}$ ounces.

From an East Indian female, aged 60.

The whole of the arch of the aorta, the thoracic and abdominal aorta, the vessels of the circle of Willis, &c., were highly atheromatous. (See further, "*Medical Post-mortem Records*," vol. I, 1875, pp. 505-6.)

45. Chronic Morbus Brightii. Highly granular and contracted kidneys. The right weighs $3\frac{1}{2}$ and the left $3\frac{1}{4}$ ounces.—From a native female, aged 38, who died in hospital. There was hypertrophy of the heart, which weighed 16 ounces, and extensive atheromatous degeneration of both the thoracic and abdominal aorta, &c. ("*Medical Post-mortem Records*," vol. II, 1877, pp. 457-58.)

46. Kidneys highly granular, contracted, and also amyloid.

Microscopic examination confirms this. The amyloid infiltration is extensive,—affects the Malpighian tufts, arteries of the cortex, and straight arteries of the pyramids. Many of the epithelial elements, crowded within the tubules of the medullary portion of each kidney, appear also to be thus transformed. There is an abundant nuclear proliferation of the connective tissue of the cortex, with commencing fibrillation of the same in parts; compression of the Malpighian capsules and uriniferous tubules; and fatty degeneration with atrophy and disintegration of the intratubular epithelium.

From a native male, aged 40. The liver was also amyloid. (See further, "*Medical Post-mortem Records*," vol. I, 1877, pp. 381-82.)

47. Chronic Bright's disease,—earlier stage. Both kidneys are somewhat reduced in size, the left in particular. The surfaces are rough and finely granular. The pyramids present a dark-purple colour from recent venous congestion (in fresh state); the cortical structure is paler and incipiently atrophied. These changes are more marked in the left than right kidney, and, near its surface, three or four simple serous cysts may also be seen,—each about the size of half a pea.

Examined microscopically sections show (1) much nuclear proliferation at the cortico-medullary junction, extending into the cortex proper, and also into the pyramids. (2) Incipient transformation of nuclear growth into connective tissue—especially in the smaller kidney. (3) Abnormal aggregation of the Malpighian capsules, with distortion and varicosity of the tubuli uriniferi,—also more marked in the left kidney. (4) Epithelial lining of tubules normal, or swollen and granular, or entirely wanting, and thus many empty tubules are found, and others filled with transparent hyaline material (casts),—especially in the pyramids. No amyloid change. (5) In the larger kidney a good deal of turgescence and fullness of the vessels composing the Malpighian tuft. (6) In both organs an admixture of red blood-cells (from extravasation) with the nuclear proliferation above described. All these changes are very characteristic of advancing granular degeneration, but peculiar in being especially marked at the cortico-medullary junction.

From a young Hindu female. She was admitted into hospital in an insensible condition, with uræmic convulsions, &c., and died, comatose, after thirty-six hours. The urine was highly albuminous and very scanty. Three weeks previously she had been delivered (in the obstetric wards) of her second child, and had been discharged convalescent. On *post-mortem* examination large apoplectic extravasations were found in the posterior lobes of the cerebrum (*see* prep. No. 7, Series VIII). (*Obstetric Post-mortem Records*, vol. I, 1877, pp. 385-86.)

48. A preparation illustrating the association of cardiac hypertrophy with chronic Bright's disease. The kidneys are typically small, granular, and contracted; the right weighs 3 and the left $3\frac{1}{4}$ ounces. The heart shows very great thickening of its walls—particularly of the left ventricle, towards the base of which the muscular tissue measures quite an inch and a half in diameter. The ventricular cavity is also somewhat dilated. The heart weighs $29\frac{1}{2}$ ounces. Taken from a European (male), aged 36, who died in hospital. (*"Medical Post-mortem Records,"* vol. II, 1877, pp. 629-30.)
49. Kidneys, granular and amyloid. The right weighs $3\frac{1}{2}$ and the left $4\frac{1}{2}$ ounces. The liver and spleen also showed well-marked amyloid or albuminoid infiltration (*see* preps. No. 328, Series IX, and No. 54, Series X). From an American seaman, aged 45, who died in hospital of pulmonary phthisis. (*"Medical Post-mortem Records,"* vol. II, 1878, pp. 729-30.)
50. Very marked granular, small, and contracted kidneys, showing, under the microscope, all the characters of advanced interstitial nephritis (chronic Bright's disease). There was much hypertrophy of the heart, which weighed 12 ounces (*see* prep. No. 55, Series VI).—From a native female, a prostitute, aged 35.
51. Acute suppurative nephritis. The kidneys of a native male patient, aged 50, upon whom the operation of lateral lithotomy was performed for the removal of a "mulberry" calculus, the size of a walnut. These organs are occupied by numerous small abscesses and points of incipient suppuration, distributed diffusely, both at the surfaces and also throughout the renal paren-

chyma. The patient died on the sixth day after the operation. (See further, "Medical *Post-mortem* Records," vol. I, 1878 p. 24.)

52. Urinary bladder, ureters, and kidneys of an East Indian woman, Louisa A.—, aged 27, who died from acute suppurative nephritis after the removal of a calculus from the bladder.

The stone was the size of a hen's egg. The urethra was first dilated, but this being insufficient, two small lateral incisions were made in its walls, and the calculus then extracted with an ordinary lithotomy forceps.

The patient was in a very weak and debilitated condition before the operation, and had been suffering from fever ever since her admission into hospital. There was great irritability of the bladder, and the urine was very offensive and ammoniacal. The symptoms of stone in the bladder had existed for about a year.

The condition of the parts preserved is as follows:—The urethra easily admits two fingers, its mucous lining is torn and shreddy. The urinary bladder (found contracted and empty) has very thickened walls; the mucous membrane superficially ulcerated, and, at the fundus, presents two or three circumscribed shallow dilatations or pouches. The left kidney is enlarged to about twice its normal size. The surface was intensely vascular and injected in the recent state, and may be seen covered with innumerable circumscribed abscesses, varying in size from a sago-grain to a horse-bean,—the majority small. They contain a few droplets of thick yellow pus. The kidney-substance generally is very soft and flabby. About two drachms of reddish, grumous-looking pus found in the pelvis. Both cortical and pyramidal portions are excessively hyperæmic, and thickly studded with minute suppurative foci. The pelvis and calyces of this kidney are widely dilated,—their lining membrane highly vascular, rough, and ulcerated. The ureter is dilated at irregular intervals, and its coats much thickened. The right kidney is atrophied, its capsule thickened, its substance acutely inflamed, and infiltrated with numerous minute circumscribed abscesses—fewer, however, than in the left kidney. There is eccentric expansion of the pelvis and calyces, the lining membrane of which is soft, highly vascular, ulcerated, and even sloughy in some parts. The ureter is dilated, but more uniformly than the left. Its coats are throughout thickened. (See further, "Surgical *Post-mortem* Records," vol. I, 1874, pp. 55-56.)

53. Acute suppurative nephritis (surgical kidney). The preparation exhibits the right kidney,—much enlarged, highly vascular and juicy. Its surface is rough and finely granular from the projection of numerous points of suppuration, either solitary or single, or aggregated into little patches. Each separate point is about the size of a swan-shot, of yellowish-white colour, semi-solid consistency, and surrounded by a delicate, but distinct hyperæmic zone. Similar points of suppuration are scattered throughout the cortical and medullary portions of the organ, as seen on section. The pelvis and calyces are highly injected and ecchymosed (in fresh state). The left kidney (not preserved) showed intense vascularity, but no points of suppuration. From a European, aged 37, who had stricture of the urethra with

cystitis, and who died from diffuse suppuration in the reeto-vesical cellular tissue, following Coek's operation (puncture of the bladder behind the prostate) for retention of urine.

54. "The kidneys illustrating abscesses both in the cortical and medullary portions, the result of pyæmia." (Ewart.)
55. Kidneys of an East Indian, aged 27, exhibiting numerous hæmorrhagic infarctions and points of incipient suppuration. The infarctions in the right kidney are distinctly circumscribed, vary in size from a horse bean to a millet-seed. The larger of these are situated along the outer border of the kidney, and are wedge-shaped on section. Similar lesions may be seen affecting the deeper renal parenchyma—both cortical and medullary. The left kidney shows much the same appearances, and, in addition, a large, pale, decolourising, fibrinous clot, placed quite superficially at the lower end of the organ. The patient died from pyæmia consequent upon stricture of the urethra, treated by dilatation (Holt's method). Several large hæmorrhagic infarctions were also found in the spleen in this case (*see* prep. No. 46, Series X).
56. Kidneys infiltrated with numerous pyæmic abscesses. From a case of suppurative synovitis, a native male, aged 50. Both organs are larger than normal, and, in the fresh state, were much swollen and vascular. The surfaces exhibit numerous suppurative foci, varying in size from a pea to a pin's head. They are distinctly circumscribed, and surrounded by hyperæmic zones of congested vessels. Each contained a drop or two of thick pus; and, as may be seen in the preparation, similar minute suppurating points are scattered irregularly throughout the cortical and pyramidal portions of each kidney.
57. A preparation showing acute suppuration (pyæmic) of the kidneys, which were also found abnormally placed. The surfaces and also the deeper parenchyma of both organs exhibit numerous minute, circumscribed abscesses, solitary, or in small groups or patches. The kidney-substance generally is highly vascular and injected. The right kidney weighs $4\frac{1}{2}$ and the left, which is smaller, 3 ounces.—From a native female, aged 60.

Both kidneys were found on the same (right) side of the abdomen,—one in its natural position in the lumbar region, beneath the liver; the other (the left) below it, at the brim of the pelvis, almost immediately over the right sacro-iliac articulation. The ureter from the higher kidney passed behind the lower one, and thence along the right wall of the pelvis to the bladder. The ureter of the misplaced kidney passed over to the left side, across the first piece of the sacrum, and behind the uterus and left ovary to the left wall of the pelvis, and then opened into the bladder. It is consequently shorter than the right ureter, but otherwise healthy. The arterial supply of the left kidney (*see* preparation) is derived from the aorta low down,—a short branch being given off just above its bifurcation, which passes to the right and divides on entering the hilum of the organ.

(*See* further, "Medicæ Post-mortem Records," vol. II, 1876, pp. 33-34.)

58. Acute suppurative nephritis (pyæmic). Both kidneys are enlarged and highly vascular. Their surfaces are covered with innumerable

small solitary abscesses, or patches of suppuration, produced by the coalescence of from fifteen to twenty or more of these suppurating foci. Both varieties of lesion are slightly raised, contain thick yellowish pus, and are surrounded by dark-purplish zones of congestion. Not only the surfaces, but also the deeper renal parenchyma is involved, and especially the cortical structure. —From a native male, aged 25, who died of chronic dysentery. There were no abscesses in the liver.

59. Large white kidneys (tubular nephritis), showing also albuminous or amyloid degeneration, and giving a very marked and characteristic reaction with solution of iodine. The kidneys are large, smooth, of a pale waxy colour, and exhibit, on section, an anæmic and hypertrophied condition of the cortical structure. Taken from a girl, aged 18, who died of dysentery, but who was also suffering from albuminuria and dropsy. The spleen in this case was very typically amyloid and "sagoëy," (see preps. 48 and 49, Series X).
60. Amyloid and fatty disease of the kidneys. From a case of pulmonary phthisis. Both organs are enlarged; their surfaces smooth; the renal substance, on section, moderately firm; the cortical structure has a yellowish waxy appearance. Both it and the pyramidal portion of each kidney give a marked and characteristic reddish-brown reaction with iodine. The liver, spleen, and all other organs, were free from this change.
61. Large, pale, waxy-looking kidneys. From an East Indian male, who died from chronic dysentery, and had also commencing pulmonary phthisis. These organs illustrate very typically both the general and microscopic characters of amyloid or albuminoid infiltration, and give, in both cortical and medullary portions, the characteristic iodine reaction of this form of degeneration. Similar changes were found in the liver, spleen, intestines, &c. (see preps. Nos. 67 and 327, Series IX, and No. 50, Series X).
62. Amyloid infiltration or degeneration of the kidneys. Both organs are a little enlarged, pale, anæmic, and waxy-looking. Solution of iodine gives a very distinct reddish-brown reaction. The patient, a native male, aged 30, was admitted into hospital very low and anæmic, and with general anasæra. The urine contained albumen. There was fever and also bronchitis;—the latter passed into pneumonia, from which he died, on the eleventh day. Similar (amyloid) changes were found in the spleen and small intestine (see preps. No. 51, Series X, and No. 68, Series IX).
63. Kidneys of an East Indian (male) patient, aged 27, who died from serous apoplexy (uræmic). Both organs show a finely granular condition of the surfaces. The capsules stripped pretty easily. The cortical structure is pale, anæmic, and waxy-looking, dotted over with bright glancing points—the Malpighian bodies, which give a distinct reaction with iodine solution (amyloid). The pyramids were bright pink and congested. (See further, "Medical Post-mortem Records," vol. I, 1874, pp. 327-28.)

64. Kidneys from a case of Morbus Brightii,—an English seaman, aged 37, who died from uræmia. The kidneys are extensively diseased. Both are greatly enlarged and heavy:—the right weighs $12\frac{1}{2}$ and the left $13\frac{1}{2}$ ounces. The surfaces are slightly roughened. Capsules very thin and transparent, peel readily. Both over the surfaces, and on section of these organs, the renal parenchyma is seen thickly and diffusely studded with opaque, slightly yellowish-looking deposits, the size of mustard-seed. These appear to be points of commencing suppuration. The cortical structure is much hypertrophied and highly fatty. The Malpighian capsules appear as bright glancing dots, scattered over the surface of the same, and these, as well as the blood-vessels at the cortico-medullary junction, and the straight arteries of the pyramids, give a distinct reddish-brown reaction with iodine (amyloid infiltration). The whole of the kidney-substance, and especially the pyramidal structure, shows recent acute congestion and vascularity, and the pelvis and calyces of each organ are similarly highly injected.

Examined microscopically, sections taken from both kidneys—from the cortical and medullary portions of each—show (1) numerous minute ecchymoses, associated distinctly with small arteries, and perhaps most marked in the cortical structure. (2) The presence of small dépôts, also closely associated with the small cortical blood-vessels, consisting of cells and nuclei (leucocytes), or of granular amorphous *débris*,—probably from degenerative changes in the cellular infiltration;— or, glistening yellowish more homogeneous dépôts—not amyloid, but looking like a colloid or mucoid transformation of these cell-elements. All these are most marked and numerous in the cortex, and to their presence is apparently due the slightly granular appearance of the surfaces and sections of these kidneys. (3) The intra-tubular epithelium is throughout swollen, cloudy, or distinctly fatty; many cells are found from three to four times their normal size. All are in a state of desquamation lying loose within the tubules, and forming also considerable-sized casts within them. (4) In some parts, the tubules are quite empty, or occupied by only an amorphous molecular *débris*. (5) Here and there, the swollen epithelial cells give a distinct reaction with iodine. (6) Numbers of large, glistening, yellowish, colloid-looking or hyaline casts are also found within the tubules (particularly of the cortex). They do not give any reaction with iodine,—are merely coloured by it. (7) The tubules throughout are dilated and distorted; in many situations ruptured. (8) The inter-tubular tissue,—except in the situation of the small dépôts above described,—remains unaffected. (9) The great majority of the Malpighian tufts and small arteries (interlobular and afferent) exhibit amyloid infiltration, and give the characteristic reddish-brown with iodine. The tufts are much swollen and enlarged; the epithelium lining the capsules is, in some of them, much loosened, and the cells large and granular. (10) The arteries have thick walls and narrowed channels.

Such changes seem to indicate that these kidneys belong to the “large white,” or “mottled” type, but complicated (1) with amyloid infiltration, and (2) with recent congestion and vascularity, which has, in parts, all but culminated in suppuration. (*See further, “Medical Post-mortem Records,”* vol. II, 1876, pp. 281-82.)

65. Kidneys from a case of Morbus Brightii,—an East Indian male, aged 32.

Both are large and heavy; the right weighs 9 and the left $9\frac{1}{2}$ ounces. The surfaces, though for the most part smooth, are, here and there,

finely granular. Both the surfaces and sections present a mottled appearance, the cortical structure being pale, anæmic, and highly fatty; the pyramidal, on the other hand, of a dark-red colour, and congested-looking (in the fresh state). The general parenchyma of the kidney is remarkably coarse, and its consistency soft. On application of iodine solution the Malpighian tufts of the cortex, and, to a less extent, the arteriolæ rectæ of the pyramids, give a reddish-brown reaction (amyloid). The kidneys are therefore mixed, fatty, and amyloid. ("Medical *Post-mortem* Records," vol. II, 1877, pp. 349-50.)

66. Fatty and amyloid kidneys, from a native male (Mahomedan), aged 20, who died of dysentery.

The amyloid or albuminoid infiltration of the Malpighian tufts and small afferent arteries is well seen in thin sections, stained with iodine, and placed under the microscope. For the rest, the intratubular epithelium is highly fatty; many tubules are filled, and even blocked with fatty granular *débris*. Free oily particles are also seen external to the tubules, as if undergoing absorption, and, in addition to these tubular changes, there is slight nuclear proliferation in the extra-tubular connective tissue. Many of the tubules are found to contain transparent hyaline casts, which, however, do not exhibit the characteristic reaction with iodine,—are merely stained yellow by it. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 161-62.)

67. "Section of a fatty kidney, from a patient in the College Hospital, who had cirrhosis of the liver, enlarged spleen, and ascites. (Ewart.) (*Presented by* Professor F. J. Mouat.)

68. Fatty kidney. The organ is enlarged, homogeneous on section, and of a pale-waxy or yellowish colour. No history. (*Presented by* Dr. J. Ewart.)

69. Large fatty kidneys, undergoing incipient contraction, and showing amyloid infiltration of the Malpighian tufts and small arteries. Both organs are enlarged, and their surfaces smooth. On section, the kidney-substance presents a pale-yellowish or lemon colour, and is anæmic. The consistency is soft and friable. Much brownish-yellow fat is seen deposited in and around the calyces of both organs. From a European, aged 50, who died of epithelioma of the tongue.

70. Enlargement of the kidneys, with advanced fatty degeneration, "from a case of epilepsy, aged 27."

71. Serofulous degeneration of the kidneys. "Both kidneys of a patient in the General Hospital. One kidney is quite disorganized, and converted into a sac containing a mortar-like substance, found on analysis to be phosphate of lime. It is amorphous under the microscope. The other kidney contains sacculated dilatations filled with the same material." (Colles.)

72. The kidneys of a European female, aged 55, who died in hospital. The right kidney is hypertrophied, but not otherwise much altered. The left is in a state of cystic degeneration; has a markedly lobulated outline, and, on section, almost the whole of the proper renal structure is seen to have been converted into a

series of large cysts. They vary in size from a hazelnut to a walnut; are situated just beneath the capsule, but largely excavate the kidney parenchyma. They are filled with a thick, pasty, opaque-white, and slightly gritty material, semi-solid in consistency, and having much the appearance of moistened plaster of Paris (phosphatic).

Examined microscopically, this pasty substance is granular and amorphous. On the addition of acetic acid, large numbers of small, round, granular pus-cells come into view, as also a considerable quantity of spheroidal and polymorphous epithelial cells. A great deal of the granular matter dissolves, and that which is left consists of organic particles—micrococci and bacteria—in active movement. On the addition of strong sulphuric acid the latter become “still,” and an immense number of beautiful crystals (prismatic or brush-like, &c.) of calcium phosphate become visible. (See further, “*Medical Post-mortem Records*,” vol. I, 1875, pp. 939-40.)

73. Strumous degeneration of the kidney. The preparation exhibits the left kidney of a native female, in which the secreting structure has been almost entirely converted into a series of large rounded cysts,—one or two the size of a potato, the rest smaller. The majority of these is occupied by a thick, pasty, yellowish-white material, chiefly phosphatic in composition. A few of the cysts contain only clear serous fluid.
74. “Kidney showing a great number of cysts on its surface, containing a translucent serous-looking fluid, and varying in size from a millet-seed to that of a pea. At one end, however, there are two covered by thickened, opaque capsules as large as walnuts.” (Allan Webb.) (*Pathologia Indica*, No. 270, page 209.)
75. “A large cyst in the left kidney, from an old subject in the dissecting-room.” The cyst is the size of a small orange. Its inner surface is smooth, glistening, and shows the remains of dissepiments which have gradually given way, the growth having been at first evidently multilocular. Scattered over the surface are innumerable minute simple cysts, some also as large as a pea; a few are found more deeply situated in the kidney-substance.
76. Very advanced cystic degeneration of the kidneys. Both organs are thickly studded with cysts, varying in size from a mustard-seed to a hazelnut, and a larger one (the size of a small orange) projects from the lower extremity of the right kidney. This kidney is preserved entire. The left kidney, bisected, exhibits similar small cysts occupying both the cortical and pyramidal structures. The latter is reduced, yellowish-white in colour, firm, and tough. The surface of the kidney is lobulated and slightly granular; the capsule adherent. All the cysts contain clear, transparent, serous fluid. Taken from a native female who died in hospital of dysentery.
77. Right kidney with two large and several smaller cysts. One, situated near the superior extremity, is seen, on section, to be multilocular; it is as large as a nutmeg, and illustrates well the usual mode of formation of the larger renal cysts,—viz. by the coalescence of two or more small cysts, their intervening dissepiments giving way.

78. Kidneys far advanced in cystic degeneration.—From an East Indian female, aged 80, who died of chronic diarrhœa. One kidney is laid open, and the capsule removed. In the other, the capsule has been left *in situ*, and the renal cysts are seen through it. They vary in size from a walnut to a pea, and contain clear, amber-coloured, serous fluid. In the right kidney (opened) the pelvis and calyces are seen to be much expanded, and the proper secreting-structure proportionately atrophied.
79. Kidneys—the right incised, the left entire. Both exhibit much contraction and atrophy of the secreting-structure and cystic transformation. The cysts in the left kidney are very large. Two of these—one on the anterior aspect, the other at the inferior extremity—are respectively as large as a walnut and a pigeon's egg. They all contain clear—almost colourless—limpid fluid.—From an East Indian female, aged 96, who died of senile exhaustion and diarrhœa. (“*Medical Post-mortem Records*,” vol. I, 1876, pp. 965-66.)
80. Very extensive cystic degeneration of both kidneys. Both organs are much enlarged,—especially the right kidney. The conformation of the latter is so altered by the cystic change that it looks more like a mass of hydatids than a kidney. The left is less affected, and has been divided in order to show the great wasting of the secreting-structure. The cysts in these organs vary in size from a pea to a small orange,—the largest in the left kidney. They contain either clear, amber-coloured, serous fluid, or (a few) more opaque, eurdy or cheesy-looking material. The larger cysts have evidently been formed by the coalescence of two or more small ones, as may readily be observed in the incised kidney,—the remnants of broken down dissepiments being still visible. They affect chiefly, but not exclusively, the cortical structure.—From a native woman, aged about 45, who died of cerebral apoplexy. (*Presented by the Police Surgeon.*)
81. Kidneys from a case of chronic Bright's disease—a native male, aged 45,—showing a markedly granular condition, and the presence of innumerable small cysts, thickly distributed over both the surfaces and in the deeper renal parenchyma. They vary in size from a pin's head to a pea, and contain either thin serous fluid, or thick glue-like colloid material.
82. The left kidney of a native adult, showing a cyst the size of a large orange, with thin, semi-transparent walls, and containing clear, limpid, serous fluid. It has developed, at the expense of the secreting-structure, from the lower half of the posterior margin and inner surface of the organ, but does not communicate with the pelvis. No history. (*Presented by the Police Surgeon.*)
83. Right kidney presenting, just beneath the capsule, a cyst with thin, almost transparent, walls, about the size of a cricket-ball, and occupying about the middle three-fifths of the convex border of the organ. The cyst has not been opened. Its contents appear to be thin and serous. There are, in addition, several small mucoid cysts scattered, here and there, irregularly, over the

surface of the kidney, the parenchyma of which is proportionately atrophied, but, together with the cysts, the whole kidney weighs no less than 14 ounces. Taken from a native male (Mahomedan), who was brought to the hospital in a moribund condition, apparently from great debility and semi-starvation after an attack of intermittent fever, and who died within an hour of admission.

84. A similar specimen. The right kidney with a cyst about the size of a cricket-ball. It has thin transparent walls, formed in part by the expanded capsule of the organ, and its contents are clear, limpid, and serous. It occupies the lower half of the kidney.--From a native male, aged 35, who died of dysentery.
85. "A very beautiful preparation, showing enormous dilatation of the pelvis and ureters from obstruction, caused by an oval calculus, which is seen quite filling up the cavity of the thickened, contracted, and hypertrophied bladder." Both ureters are greatly dilated and varicose. "The whole of the medullary and cortical substance of the *left* kidney has been destroyed, the organ presenting a huge pelvis, with many sacculations replacing the true parenchyma. The secreting portion of the *right* kidney is hypertrophied; but the increasing size of the pelvis has begun to promote the destruction of the adjacent medullary substance. The parietes of the bladder vary in thickness from a half to three-quarters of an inch." (Ewart.)
86. A preparation showing two kidneys joined at their inferior extremities by a firm, rounded band of partly glandular, partly fibrous tissue, an inch and a half in length, three-fourths of an inch in thickness. These organs show great dilatation of their pelvis and calyces, while the proper secreting-structure is reduced and atrophied. Occupying the pelvis of the right kidney is an irregular-shaped mulberry-looking dark, surfaced calculus, and, in that of the left, a large rounded lithic acid calculus. The ureters from these conjoined kidneys are much dilated, and their walls thickened.--From a prisoner in the Rawulpindi Jail. (*Presented by Dr. R. T. Lyons.*)
87. "Both kidneys of a European patient, aged 28, who was admitted with fever and pain in the left side, and whose urine was foetid and contained casts. On the 14th day after admission he was attacked with severe abdominal pain, and died, collapsed, in a couple of hours.
 "A large abscess, holding two pints of pus, occupied the left lumbar region. It was bounded above by the pancreas, in front by the transverse colon, descending layer of transverse meso-colon, and left kidney. Externally it was bounded by the left kidney and circumrenal adipose tissue, internally by the aorta, and posteriorly by the psoas muscle, lower ribs, and costal origin of the diaphragm, a portion of which was destroyed, so as to expose the tenth rib.
 "The left kidney shows great dilatation of the pelvis, ureter, infundibula, and calyces. There is a ragged opening in the posterior wall of the pelvis, through which a plug-shaped calculus, about the size of a grape, is seen protruding. At the autopsy, the

calculus had completely escaped from the pelvis, and was lying loose in the cavity of the abscess. Two small calculi, the size of mustard-seeds, were also found in the dilated calyces. The ureter (in which a glass tube has been placed) is considerably dilated. The kidney was imbedded in dense adipose tissue, which was so adherent to its capsule as to render its removal very difficult.

"The right kidney is healthy, but hypertrophied to compensate for the loss of the left." (Colles.) (*Presented by* Professor Chuckerbutty.)

88. The left kidney of a Mahomedan, aged 30, who died in hospital of remittent fever. The whole organ,—as is seen in the section made,—is hollowed out into a series of ampullar or cystic dilatations, expansions of the normal calyces and pelvis of the kidney. These have encroached upon and produced great atrophy of the proper secreting-structure, so that in parts it is not more than a quarter of an inch in thickness.

89. The kidneys, with the ureters and bladder, of a European patient in the General Hospital, who died after the operation of lithotomy.

This preparation exhibits, very markedly, the effects of acute pyelonephritis, the result of chronic irritability of the urinary bladder (cystitis) from the presence of a calculus. The kidneys are enormously enlarged and swollen. In the fresh state they were intensely vascular and injected,—numerous purplish blotchings and puncta of blood extravasation being freely distributed throughout both cortical and medullary portions of the renal parenchyma. The pelvis in each organ is remarkably dilated, as also are the calyces; and their lining membrane highly injected and ecchymosed. Both ureters are considerably expanded, and their lining membrane intensely congested and softened. The urinary bladder is contracted, and all its coats, but especially the muscular, hypertrophied. (*Presented by* Dr. D. O'C. Raye.)

90. Left kidney, with an impacted calculus in the pelvis. It is irregular in shape, and apparently of the mulberry (oxalate of lime) variety. The calyces, pelvis, and ureter are much dilated, and were occupied by purulent fluid. The secreting-structure is acutely inflamed and reduced in thickness (acute pyelitis).—From a native male, aged 60, who died from fracture of the skull. (*Presented by* the Police Surgeon.)

91. "Left kidney of a Sonthal, aged 32, who died in the Hazaribagh Jail of diarrhoea, and strumous abscesses in different parts of the body. He had complained of pain down the left loin and thigh for some years, but was able to do light work until three months of his death. The pelvis, infundibula, and calyces form a sacculated cyst, whose walls (with which the capsule of the kidney has coalesced) are not above a line thick, and show no trace of glandular tissue. In one of the saccules lay two calculi, the size of pins' heads. The ureter, at about an inch from the pelvis, was occluded by a conical calculus, as large as a kidney-bean. The right kidney was enlarged but healthy; and

there were no calculi in the bladder." (Colles.) (*Presented by Dr. J. M. Coates, Superintendent, Hazaribagh Jail.*)

92. Pyo-nephritis. The right kidney of a Hindu (male) patient, aged 45, in a state of suppurative disorganisation. The section made through it shows extensive dilatation of the pelvis and calyces, with the impaction, in one of the latter, of an irregular-shaped "mulberry" calculus, about the size of a bullet. The proper secreting structure has almost disappeared. The organ is made up of a series of cysts or pouches, which were filled with purulent fluid, and are separated from each other by broad bridges of fibro-cellular tissue.
93. Hydronephrosis of the left kidney. From a native male (Hindu), aged 32, who died of abscess of the liver. On *post-mortem* examination this left kidney was found collapsed and empty, lying against the spine in the left lumbar region. It consists simply of three large and two or three smaller intercommunicating pouches. The secreting or glandular structure has entirely disappeared. The three larger pouches open into a much dilated pelvis, from which proceeds a very narrow but pervious ureter. The opposite kidney was large and hypertrophied (compensatory).
94. An enormous hydronephrotic tumour, from an East Indian (male), aged 35, who died of pulmonary phthisis. On opening the abdomen, *post-mortem*, this tumour,—the size of a cocoanut,—was found occupying the left lumbar, left hypochondriac, a portion of the epigastric, and the umbilical regions. It consisted (as may be seen in the preparation) of two parts.—That which lay nearest and a little across the median line, is oval in shape, and resembles a greatly distended gall-bladder; the other and larger part is about the size of the foetal head. There is an hour-glass-like constriction between these two portions. This tumour was bounded superiorly by the stomach, below by the intestines, in front by the mesentery, behind by the spinal column and spleen, to the right by the liver, and to the left by the left kidney—with which it is intimately connected. It consists of an enormous cyst, filled with clear, limpid fluid. It was developed from the whole of one lateral half (the right) of the kidney. The latter is atrophied, and its substance studded with small serous cysts. The pelvis is large, and encroaches upon the secreting-structure. The ureter is free, and does not communicate with the huge cyst above described.
95. Left kidney showing great expansion of the pelvis and calyces, so as to form several rounded loculi and cystic dilatations. There is atrophy of the secreting structure. Taken from a native male patient, aged 21, who had long suffered from stricture of the urethra, and who died after the operation of perineal section. (*See further, "Surgical Post-mortem Records," vol. I, 1875, pp. 183-84.*)

96. "A kidney, in the parenchyma of which several calculi are imbedded." They appear to be firmly encysted, are of irregular outline, tuberculated, and of a brownish-yellow colour.
97. "Sections of both kidneys. The left kidney presents a large calculus, very irregular and much nodulated, occupying the pelvis, and sending nodular projections into the calyces. There are also exhibited two calculi, occupying a considerable portion of the medullary and cortical structure. The organ is so much taken up with calculi and sacculated pouches that there is only a thin layer of the cortical structure remaining. The right kidney is reduced in size, is much sacculated, and exhibits one small calculus." (Ewart.) (*Presented by Assistant-Surgeon Tameez Khan.*)
98. Small and atrophied kidneys, with great dilatation of the ureters, pelvis, and calyces, from the impaction of calculi. In the preparation, a large irregular-shaped calculus is seen completely filling the pelvis of the upper kidney, and sending prolongations into the calyces. In the lower kidney a group of about half a dozen small calculi obstruct the ureter. The secreting structure in both organs is much reduced, and the renal parenchyma greatly sacculated. (*Presented by Professor Edward Goodeve.*)
99. "Right kidney, with pelvis and infundibula greatly dilated, and occupied by an irregular-shaped calculus, which has broken into several fragments." (Colles.) (*Presented by Dr. D. B. Smith.*)
100. Left kidney of a native male patient, aged 34, who died of hydrophobia. The organ, on section, shows great dilatation of the pelvis, with the formation of sacculi or diverticula, and corresponding atrophy of the secreting structure. Impacted firmly at the lower part of the pelvis is a very irregular-shaped ("mulberry") calculus, and filling several of the infundibula are numerous small faceted calculi (lithic acid), about the size of tapioca-grains.
101. Atrophied right kidney, showing also, a large, dark-looking, probably lithic acid calculus filling the dilated pelvis, and sending processes into the infundibula. The left kidney, also preserved, is hypertrophied.
- "It is said that the man, (a native male, aged 30), suffered from severe pain in the abdomen, and committed suicide by hanging." (*Presented by Uday Chand Dutt, Civil Medical Officer, Furreedpore.*)
102. Kidneys with large hæmorrhagic infarctions. The largest is situated at the lower extremity of the left kidney, has an area of about two square inches at the surface, but is wedge-shaped, and becomes narrowed as it extends more deeply into the kidney-substance. The others are smaller, stand out abruptly from the renal surface, and are distinctly circumscribed. They all appear to be of recent origin, and presented (in the fresh state) a smooth, homogeneous, dark-purple colour. Small hæmorrhagic puncta or ecchymoses were freely distributed throughout the deeper parenchyma of both organs.

From a native male (Mahomedan), aged 40, who died of cerebral apoplexy. (*See further, "Medical Post-mortem Records,"* vol. III, 1880, pp. 603-4.)

103. The kidneys of a European woman, aged 30, a prostitute, admitted into hospital suffering from phthisis. She was attacked somewhat suddenly with uræmic symptoms (convulsions, &c.) and died, comatose, in a few hours.

Both organs are much enlarged, swollen, soft, and highly vascular. The right weighs 10 and the left 7 ounces. The surface of the right kidney, just beneath the capsule, presents several large recent hæmorrhagic infarctions. The largest measures two inches in length, an inch in breadth, and occupies nearly the whole thickness of the renal parenchyma. Others have a superficial area varying from about that of a rupee to that of a split-pea. They are all strictly and abruptly circumscribed, more or less wedge-shaped, dark-red in colour, and homogeneous in appearance. Besides these, there are innumerable small circumscribed abscesses and points of incipient suppuration; while the renal parenchyma generally is softened and intensely vascular. In the left kidney these changes are not so marked, but there are numerous small infarctions,—some recent, others decolourised; some softening, others absolutely purulent,—all freely distributed over the surface, and also in the substance of the organ, the general parenchyma of which is, as in the right kidney, highly congested and of a dark-purplish colour. (*"Medical Post-mortem Records,"* vol. III, 1879, pp. 167-68.)

104. "Sections of two kidneys, showing large localized strumous deposits, some of which are more or less degenerated and softened. In those parts where they are situated, they have led to the complete destruction of all the renal structure. Thus the deposits of opaque-yellow tubercular material are well defined and circumscribed. Those undergoing softening and liquefaction appear as if they were encysted. These depositions are almost wholly confined to the cortical portions of the organs. From a Mulatto male, who had twice been operated upon for stone, and died, anasarctous, with albuminuria." (Ewart.) (*Presented by Professor Norman Chevers.*)

105. Kidneys from a case of acute general tuberculosis,—an East Indian male, aged 35. Both organs are enlarged and flabby, and are seen to be diffusely infiltrated with yellowish-white tubercles, about the size of duck-shot. These are most abundant at the surface, just beneath the capsule, and more numerous in the cortical than in the pyramidal structure. The lungs and spleen were found similarly affected.

106. Both kidneys affected with "serofulous disease" or "renal phthisis,"—a magnificent example of a somewhat rare morbid condition. Both organs are enlarged to about three times their natural size, and proportionately increased in weight. The capsules are thickened and morbidly adherent. When stripped forcibly, the surface of each kidney presents a lobulated or tuberculated condition—smooth, flattened patches of the parenchyma

alternating with projecting, more or less rounded, soft nodules. On section, the pelvis and calyces of each organ are seen to be greatly thickened, and their lining membrane dotted over with soft tubercular patches or granules, or small superficial erosions. The whole of the secreting structure—specially in the left kidney—is occupied by rounded, softening masses of yellowish-white colour, and of cheesy appearance and consistency. These vary in size from that of a walnut to that of a pea, or smaller;—the larger ones evidently formed by the coalescence of two or more smaller nodules. The central portions of these masses are very soft indeed, like cream, and consist of a puriform *débris*, which, under the microscope, reveals a large quantity of granular and molecular fat, with yellowish pigment-matter, and degenerating free nuclei and cells, but no true formed or perfect pus corpuscles,—changes evidently indicative of a molecular disorganisation of the secreting structure comprised within the area of each serofulous mass.

Sections taken from the margins of such nodules exhibit the proper renal structure profoundly affected—the epithelia swollen, granular, shreddy, and proliferating within the tubules, which are dilated, distorted, many ruptured,—in parts, denuded and quite empty. Around the tubules—*i.e.*, in the intertubular connective tissue—there is an abundant free cell-growth in parts (not uniformly). The cells are small, granular, and nucleated. In parts again, this kind of small-celled proliferation is combined with overgrowth of the delicate connective tissue itself, forming limited areas in which either no secreting structure exists, or but the faint outlines of tubules and Malpighian bodies can be discovered. On the whole, the characters of what is recognised as “renal phthisis” or “serofulous disease” of the kidneys is well displayed in both these organs.

The patient, a European (adult), died in the Presidency General Hospital.

“He had been ill for two years, getting by degrees thinner and weaker. For some time past has noticed that his urine has been thick when passed, and little curdy masses have come away. Has never had any pain or difficulty in passing urine, and has never passed blood. There was a little fulness in the left lumbar region, and marked tenderness on pressure there. The urine was very slightly acid, full of albumen and pus-cells. On *post-mortem* examination, the lungs were collapsed,—(the left apex had a scar in it)—they were anæmic and crepitant. The walls of the left ventricle of the heart were very thin. The liver showed no marked change, except thickening of the capsule in places. Brain and intestines not examined.” (Note by Dr. Wall.)

Presented by Dr. J. C. Wall, General Hospital, Calcutta.

107. A very remarkably nodulated and fissured condition of the kidneys, irregularly distributed,—*i.e.*, not uniform in either organ. The surfaces also exhibit numerous small cysts, varying in size from a hazelnut to a sago-grain. Many minute cysts occupy the deeper renal parenchyma,—particularly the cortical portion. The appearances of these organs suggested syphilitic changes, and this is confirmed on microscopic examination.

The entire cortex is found infiltrated, at intervals, and in an irregular manner, with a small-celled, nuclear growth, tending in parts to imperfect fibrillation, in others to granular, fatty, and mucoid degeneration. The secreting

structure is much destroyed. The Malpighian capsules are dilated to form cysts,—some of which are of large size, and have imperfect dissepiments. The tubules are either empty or filled with highly granular epithelium, and some contain colloid or mucoid casts.

From a West Indian (Negro), aged 40, who died in hospital of pulmonary phthisis. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 359-60.)

108. Right kidney, from a case of diffuse melanosis,—an East Indian (male), aged 44,—showing small, dark, sooty deposits in the cellular tissue and lymph-glands surrounding the pelvis and capsule of the organ. The substance of the kidney is apparently not involved.

The structure of these melanotic deposits is that of encephaloid carcinoma. The liver, brain, bones, &c., were infiltrated with similar growths. ("Medical *Post-mortem* Records," vol. I, p. 16.)

109. Sarcoma of the kidney. Left kidney of a native male, aged 35. "The man had been recently admitted in a dying state, suffering from dysentery, and with an iliac abscess on the left side. The latter was opened. It contained a quantity of semi-solid pus. On *post-mortem* examination the left kidney was found totally disorganised. The iliac abscess was isolated and had no connection with the kidney." The kidney is enormously enlarged,—weighs 24 ounces, and was with difficulty separable on the inner side from a group of enlarged mesenteric and lumbar glands. The capsule is much thickened and adherent to the surface of the organ. At the hilum, the ureter and renal blood-vessels are found inseparably matted together, and imbedded in a dense lobulated mass of enlarged lymphatic glands and infiltrated connective tissue. The secreting-structure (as may be seen from the section made) is greatly atrophied, or rather, completely disorganised, as regards the inner two-thirds of the organ; a thickened rim of renal tissue, measuring about half an inch in diameter, only persists at the periphery of the kidney. The disorganised portion is soft and pulpy, of a brownish or pale-yellowish colour.

Microscopically examined, it exhibits a few renal vessels and tubules,—the latter destitute of epithelial lining, and much broken up. Taking the place of the disintegrated secreting structure is a highly cellular lymphoid growth. The cells have single large nuclei, and are imbedded in a scanty fibrillated stroma, the meshes of which are so small as to be only visible in well-brushed-out sections. The lymphatic glands—lumbar and mesenteric—(not preserved), showed similar changes. The growth, therefore, appears to be a lympho-sarcoma or lymphadenoma. (*Presented by* Dr. D. O'C. Raye, Presidency General Hospital.)

110. Small horse-shoe shaped kidney from a youth. No history.
111. Large horse-shoe kidney. There is a thick isthmus joining the lateral halves. It is deeply grooved on the anterior aspect, and within the grooves lie the ureters (two). (*Presented by* Dr. J. Macpherson.)
112. Horse-shoe shaped kidney. The double ureter descends on the anterior surface of the "isthmus," lying in shallow grooves here.

The aorta and vena cava are seen *in situ*. From the former, which lies in a deep groove behind the isthmus, three renal arteries are given off. Two large renal veins from the right, and one from the left half of the organ enter the inferior vena cava on the anterior aspect of the kidney. (*Presented by Assistant-Surgeon Juggabandu Bose.*)

113. "A specimen of horse-shoe shaped kidney, from a case of hepatic abscess."

The lateral halves of the organ are united at their lower ends by a transverse band two inches long, an inch and a half broad, and an inch thick. On its anterior surface descend the ureters, lying in longitudinal well-marked grooves. A common capsule invests the whole organ; it separates easily, and appears to be healthy. The left is the larger half of the kidney, measures $5\frac{1}{2}$ inches $\times$ $2\frac{5}{8}$ inches. The right measures 5 inches $\times$ $2\frac{1}{8}$ inches. The transverse or connecting portion is directly continuous with the secreting or glandular structure of the lateral halves of this kidney, and exhibits, under the microscope, an exactly similar structure—straight and convoluted uriniferous tubules, Malpighian capsules, blood-vessels, &c. (*Presented by Dr. Joubert, Presidency General Hospital.*)

114. A conjoined kidney, from a case of cholera, a native male, aged 25. The organ is horse-shoe shaped, with the convexity directed downwards. The connecting portion (isthmus) is about an inch in length and the same in thickness. It rested on the first lumbar vertebra. It is enclosed in a common capsule with the lateral halves of the organ. The ureters (double) pass downwards and inwards, cross the anterior surface of the isthmus, lying in distinctly marked grooves here, and proceed to the urinary bladder (also preserved), where they terminate in the usual manner.

115. Single horse-shoe shaped kidney. The lateral portions are united by a narrow band or isthmus, which rested on the second lumbar vertebra. The anterior surface of the latter is marked by two slight, shallow grooves for the reception of the ureters (double), which pass downwards and outwards to the base of the bladder (*see preparation*).

Found on *post-mortem* examination of a native male (Hindu), aged 35, who died in hospital from aneurism of the thoracic aorta.

116. Another similar specimen, from a dissecting-room subject, a native male, aged 35. The commissure lay over the third lumbar vertebra, the aorta and vena cava intervening between it and the spine. On the anterior surface of the commissure or isthmus are two distinct grooves, in which were lodged the respective ureters of each lateral half of this kidney. (*Presented by Mr. T. G. Palit.*)

117. Kidneys with ureters and urinary bladder, preserved together to show their mutual relationship. The left kidney is misplaced. It is somewhat small in size, but otherwise normal. It was

found at the brim of the pelvis, immediately over the left sacro-iliac synchondrosis, above, and a little to the outer side of the left common iliac vessels. The arterial supply is derived from the aorta low down,—two branches (one of which has been accidentally cut through) given off just above its bifurcation (*see* preparation). The left ureter measures only four inches. It passed along the left side of the cavity of the pelvis, and terminated in the urinary bladder in the usual manner.—From a native male, aged 25.

- 118.** A misplaced kidney (the right), found on *post-mortem* examination of an aged Armenian (male), who died from scirrhus carcinoma of the liver.

This kidney was found lying immediately over the prominence of the sacrum, at the brim of the pelvis. There are two renal arteries (*see* preparation), given off from the abdominal aorta, half an inch above its bifurcation, and both arise from its anterior aspect. The one to the left passes directly downwards to the apex of the kidney, and there breaks up. The right branch is larger, and proceeds to the hilum. The renal veins are four or five in number. The largest, emerging from the kidney, is directed upwards and to the left, and joins the left renal vein. Two others cross the anterior surface to reach the inferior vena cava, and one or two small veins join the left common iliac.

The ureter of this kidney is short, and descended almost vertically to the base of the bladder. The left kidney occupied its normal position.

- 119.** Misplaced kidney (left). It was found at the brim of the pelvis, over the left sacro-iliac articulation. The hilum is directed towards the left, and from it the ureter descends to the bladder. It is short and throughout dilated. The right kidney occupied its normal position. From a European (male), aged 40, who died of cerebral apoplexy. (*See* further, “*Medical Post-mortem Records*,” vol. III, 1880, pp. 693-94.)

- 120.** Large single or solitary kidney, weighing $11\frac{1}{2}$ ounces. “No right kidney was found; this is the left one, and communicated by means of a single ureter with the urinary bladder.” The organ is enlarged, but its structure, both to the naked eye and on microscopic examination, appears to be healthy. The surfaces are somewhat unusually lobulated (congenital), but smooth; the capsule separated easily. Both cortical and pyramidal portions of the secreting structure participate, about equally, in the hypertrophy.

‘From a European (Italian), who died in hospital from syphilis and pulmonary phthisis.’ (*Presented by* Professor J. Fayrer.)

- 121.** “Left kidney of a female, from the dissecting-room, showing two ureters, which, however, are seen uniting into one before they reach the bladder.” (*Presented by* Professor Crozier.)

122. Right kidney with two ureters, each of about equal size. They emerge from the upper and lower ends, respectively, of the hilum, and remain separate for about six inches, then unite to form a common duct, which opened into the bladder in the usual manner. (*Presented by Dr. D. B. Smith.*)
123. The right kidney and ureter of a native male (Hindu), aged about 40, who died of pelvic peritonitis, after the operation of lithotomy. The secreting structure of the kidney is seen to be much wasted, and the pelvis, calyces, and ureter dilated,—the last (ureter) especially so; it presents a moniliform appearance from this cause. Impacted in its canal, about an inch above its vesical termination, is an oval-shaped calculus, about the size of a sparrow's egg. (*See further, "Surgical Post-mortem Records," vol. I, 1875, pp. 203-4.*)
124. The kidneys, ureters, and urinary bladder of a native male infant, aged four months. The kidneys are "reduced to mere sacs," the secreting structure has almost entirely disappeared. The ureters are enormously dilated, especially about an inch above their vesical terminations. They were found distended with a "limpid, odourless fluid." The bladder is "hypertrophied, its coats being much thickened; the muscular fasciculi enormously enlarged, and crossing one another in every direction, giving the interior of the viscus the appearance of a ventricle of the heart." There is a prominent and enlarged condition of the "uvula" or fold of mucous membrane at the neck of the bladder, which projects into the prostatic portion of the urethra, and probably was the cause of the retention of urine, from which the child suffered, and has led to the abnormal condition of the ureters and kidneys above described.

The infant suffered from constant sickness, probably due to uræmic poisoning, and died comatose.

"There was not a trace of inflammatory action in the bladder, ureters or kidneys," and the urethra was healthy throughout. (Case fully reported in *Indian Medical Gazette*, vol. XII, 1877, p. 244.) (*Presented by Surgeon-Major F. Odevaine, F.R.C.S., Bhopal Battalion.*)

125. The left kidney of a native male (Hindu), aged 47, who died of exhaustion and pyo-nephritis after the operation of lithotomy. The secreting structure of the kidney is seen to be greatly wasted, while the pelvis and calyces are enormously dilated, and form a cavity the size of an orange. This was found filled with purulent fluid.

About two inches from the pelvis, the ureter is seen to be obstructed by a conical-shaped calculus, the size of a bullet,—its flattened base being directed towards the kidney, the apex downwards. It has evidently become impacted on its way to the bladder. The right kidney also showed considerable dilatation and inflammation of the pelvis, and atrophy of the secreting structure.



CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART VII.

INJURIES AND DISEASES OF THE BLADDER,
URETHRA, AND PROSTATE GLAND.

INJURIES AND DISEASES OF THE MALE
ORGANS OF GENERATION.

INJURIES AND DISEASES OF THE FEMALE
ORGANS OF GENERATION.

SERIES XII, XIII, AND XIV.



SERIES XII.

INJURIES AND DISEASES OF THE BLADDER,
URETHRA, AND PROSTATE GLAND.

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1. “Bladder, pubis, serotum, and penis *in situ*. The bladder is ruptured in two places, one aperture being in front and to the left, the other being near the fundus and at the right side. The latter is as large as a florin, as held open by a glass rod, and possessing somewhat uneven margins. The former is as large as a sixpence, but there is a prolongation of mucous membrane, partially shutting up and limiting the size of the aperture. — From a European who fell out of a window while in a state of intoxication. Urine had extravasated into the cavity of the abdomen. None passed without the use of the catheter, which passed through the rent into the abdominal cavity. The intestines were agglutinated together from peritonitis. Patient died on the fourth day after the accident.” (Ewart.)
Presented by Professor R. O’Shaughnessy.
 2. “Rupture of the anterior portion of the bladder in a female. The edges of the breach are rendered rough and irregular by the deposition of lymph. That part of the margin which is smooth and even has been produced by the knife after death. The uterus, ovaries, and vagina, are *in situ*.” (Ewart.) No history.
 3. Hypertrophy of the bladder. “The muscular structure of the bladder is now $\frac{3}{4}$ of an inch thick, from stricture about a couple of inches from the *meatus urinarius externus*. The mucous membrane and connective tissue are increased in bulk. There is great thickening and dilatation of the urethra behind the stricture. The sacculation at the membranous portion has given way, and become disorganized from sloughing inflammation. It now presents shreds of perished and perishing connective and muscular tissues. The mucous membrane of the bladder is thickened, dull, opaque, and more or less lined by shreds of exudation material. There is a considerable quantity of fibrous tissue at the seat of stricture, and for some distance anteriorly and posteriorly. The adjacent corpora cavernosa are condensed and hypertrophied.” (Ewart.) *Presented by* Dr. Dickenson of Azinghur.
 4. “Bladder and penis, with the urethral canal and vesical cavity laid open. The viscus is greatly contracted, and its walls are enormously thickened. The rugæ and sulci, caused by irregularities in the increased growth of the subjacent muscular fasciculi,

are well marked. The prostate is enlarged, and the corresponding portion of the urethra dilated. From stricture of the urethra." (Ewart.)

5. A specimen exhibiting enormous concentric hypertrophy of the bladder,—the muscular coat being chiefly affected. It is thrown into huge, irregular folds, and measures fully three-quarters of an inch in thickness. The capacity of the bladder is greatly reduced. No history.
6. Hypertrophy of the bladder, particularly of the muscular coat, the result of stricture of the urethra. There are several false passages in the membranous-prostatic portion of the canal.—“From a European seaman, aged 34, who died of cholera.”
7. The bladder and urethra of a European, aged 61, who died in hospital. The bladder is enormously enlarged, and its coats greatly hypertrophied. The mucous membrane—in the recent state—was a good deal congested, and thrown into prominent vascular folds. There is an old organic stricture in the membranous portion of the urethra, while the prostatic portion is dilated and riddled with false passages.
Presented by Professor J. Fayrer.
8. Hypertrophy of the bladder from stricture of the urethra. “The patient had had a tight stricture for many years. This occasionally so increased by spasm that for weeks the bladder remained full and distended, the urine merely dribbling away. He was admitted into the General Hospital in this condition, complicated by ‘Chittagong fever’ of several weeks’ duration. The stricture was overcome by passing Nos. 8, 10, and 12 catheters on three consecutive days under chloroform, but this was too late to save life; anæmia and malarious fever causing death.” The stricture is situated in the membranous portion of the urethra, where there is much fibrous thickening of the submucous tissues.
Presented by Dr. W. J. Palmer, Presidency General Hospital.
9. Atrophy of the bladder. All the coats of the viscus are much thinned and dissected-out looking. The lateral lobes of the prostate gland are enlarged.—From a European, aged 58, who died of Morbus Brightii (granular and contracted kidneys).
See further, “Medical Post-mortem Records,” vol. III, 1880, pp. 677-78.
10. “Inflamed mucous membrane of the bladder, which has ulcerated on its anterior aspect. These ulcers are covered with flocculent lymph and mucus, and the rest of the surface is slightly roughened by minute depositions of lymph upon an over-granulated condition of the mucous membrane. The muscular coat is thickened.” (Allan Webb, *Pathologia Indica*, No. 183, p. 210.)
11. Acute inflammation of the bladder, the mucous membrane of which is seen thrown into prominent folds and rugæ, which are ulcerated and covered with recent inflammatory exudation. The process has apparently extended upwards through the ureters—which are dilated and their lining membrane inflamed—into the kidneys. These organs are large, highly vascular, and softened; their pelves and calyces are dilated and superficially ulcerated

(pyelitis); and the renal substance, both superficially and more deeply, is infiltrated with minute points of suppuration.

12. Chronic cystitis, the result, apparently, of stricture at the bulbous portion of the urethra. The walls of the bladder are greatly hypertrophied, and the mucous membrane covered, almost uniformly, by a thin layer of recent lymph, which gives it a remarkably rough, rugose appearance. No history.
13. The genito-urinary organs of a native male (Hindu), aged 50, who died in hospital. The bladder is enlarged, and its walls enormously thickened, particularly the muscular coat, which measures from $\frac{1}{4}$ " to $\frac{1}{3}$ ". The mucous membrane forms huge folds or rugæ, and is covered thickly by a yellowish-white phosphatic deposit. The prostate gland is enlarged, swollen, and soft; the right lobe hollowed out into an abscess, which contained about half an ounce of thick yellow pus. The membranous and bulbous portions of the urethra present a highly torn and disorganised condition, and the floor of this part of the canal, for the space of about two inches, is dark and gangrenous, and from it there are several false passages leading down into the perineum. The urethra, anterior to this part, shows several superficial lacerations of the mucous membrane. The meatus is much contracted, and has a hard, cicatricial-like appearance. It has been recently incised to permit of the passage of a catheter.

The right kidney is a little hypertrophied; the pelvis, calyces, and ureter dilated. The left kidney is atrophied; its secreting structure reduced to a mere rim from $\frac{1}{4}$ " to $\frac{1}{3}$ " in thickness. The pelvis, calyces, and ureter all much dilated. Projecting from the lower extremity of this kidney is a thin-walled, semi-transparent cyst, the size of a potato. ("Surgical *Post-mortem* Records" vol. I, 1881, pp. 779-80.)

14. The urinary bladder and urethra of a native male (Hindu), aged 25, admitted into hospital with stricture, and who died from pyæmia following the operation of perineal section. The urinary bladder is strongly contracted; it is about the size of an ordinary orange, and its walls are enormously hypertrophied. The muscular coat alone measures at the fundus quite an inch. The mucous lining is thickly plicated and prominent; intensely vascular, ecchymosed, and in parts superficially excoriated. On the anterior surface of the bladder, just beneath the peritoneal coat, midway between the fundus and neck, there is a circumscribed abscess, involving a thickness of about a fourth of an inch of the parietes at this part; and half an inch lower down is a similar, incipiently suppurating infarction, about the size of a pea. The prostatic plexus of veins around the neck of the bladder were found dilated, inflamed, and filled with thick pus; their lining membrane dark and sloughy-looking.

The prostatic and membranous portions of the urethra are riddled with false passages, with the largest of which, a little to the left of the median line, the opening made by the operation (perineal section) communicates. Involving the bulbous portion of the urethra,

and extending also for about half an inch anterior to it, is a very hard cartilaginous stricture. The urethral canal has become almost completely obliterated at this part. (*See further, "Surgical Post-mortem Records,"* vol. I, 1881, pp. 769-70.)

15. The genito-urinary organs of a native male, aged 30, who died from syphilitic myelitis with paraplegia, &c. The urinary bladder is in a semi-gangrenous condition. Its mucous lining has almost entirely disappeared. The muscular coat forms prominent ridges and furrows, is highly vascular, and superficially eroded or ulcerated; presents a softened, shreddy, and disorganised appearance, especially at the neck of the bladder.

The prostatic, membranous, and bulbous portions of the urethra exhibit numerous lacerations of the mucous membrane (false passages), evidently produced by catheterisation. The rest of the urethral canal is healthy.

The bladder was paralysed during life ;—the urine had to be drawn off by catheter daily.

The kidneys are a little swollen, and were highly vascular in the fresh state. Their surfaces are covered with small suppurating foci (abscesses).

16. Bladder showing great thickening of the muscular coat, and a sacculated dilatation of the wall, immediately above and to the outer side of the orifice of the right ureter. No history.

17. "Preparation illustrating a fistula leading from the bladder through the abdominal parietes, and communicating externally just underneath the umbilicus. From a paraplegic native woman. Bladder is small, with the mucous membrane at the fundus ulcerated." (Ewart.) *Presented by* Professor J. Fayrer.

18. Preparation showing (a) a recto-vesical fistula—indicated by a white glass rod; the vesical orifice at the base of the trigone, the rectal, an inch above the anus. (b) The cicatrix left in the perineum from the operation of lateral lithotomy, performed in this case for the removal of a calculus weighing 131 grains. (The incision at the neck of the bladder is indicated by a blue glass rod).

The patient, an Englishman, aged 44, had been suffering from the fistula,—which was of "traumatic" origin,—for seven months.

He had nearly recovered from the operation above alluded to when symptoms of pyæmia developed, and "multiple abscesses in the liver" were found after death. *Presented by* Professor J. Fayrer.

19. Perforation of the urinary bladder by an abscess which had formed between it and the rectum. "There was no marked symptom by which the abscess could be detected until the day before the death of the patient, when he passed a quantity of fœtid sanious pus through the urethra." The preparation exhibits the position of an abscess between the rectum and the bladder, opening into the latter below, and into the recto-vesical cul-de-sac of the peritoneum above. Death resulted from peritonitis.—From a European male patient in the General Hospital, admitted for

pulmonary phthisis. *Presented by* Dr. D. O'C. Raye, Presidency General Hospital, Calcutta.

20. Recto-vesical fistula. The rectum and bladder are preserved as found on *post-mortem* examination. The former is contracted, its walls hypertrophied; the mucous membrane thick and ulcerated. A small amount of fœcal matter with urine was found in this viscus. It is firmly united to the rectum posteriorly, and a ragged fistulous communication, nearly as large as an eight-anna (shilling) piece, exists between them. It is situated about four inches above the anal operature, and opens into the fundus vesicæ. The rectum shows a swollen and softened condition of its walls; was adherent posteriorly to the sacrum and coccyx, which were necrosed, and here the tissues of the bowel are especially shreddy and disorganised. The mucous membrane from the anus upwards as far as the sigmoid flexure presents a series of large sloughy-looking ulcers.

History.—"J. T.—, aged 27, an English seaman (cook), was admitted into the General Hospital on the 30th December 1879, suffering from pain over the sacrum, and frequent desire for defœcation. Eight weeks previously he had received an injury over the sacrum, which was followed by severe pain in the part, and he began to pass blood and slime. He was weak and emaciated on admission. An ulcer, the size of a two-anna piece, was seen with the speculum on the back wall of the rectum, about four inches above the anus, discharging thick pus with blood. Scanty motions with a good deal of purulent matter continued to be passed for four weeks, and then fœculent matter was noticed to come out by the urethra, causing much pain and burning. Almost simultaneously two abscesses formed, one in each ischio-rectal fossa. These were opened, and a great deal of thick, greenish, very offensive pus, with bubbles of gas (indicating its fœcal origin), was evacuated, and now the lower part of the sacrum and coccyx could be felt by the finger roughened and necrosed. Thenceforth fœcal matter with urine began to pass through the openings made. The patient grew weaker; the lower extremities became swollen and œdematous, and he died on the 10th March 1880." *Presented by* Dr. F. C. Nicholson, Presidency General Hospital, Calcutta.

21. "Contracted bladder with hypertrophied and thickened wall, containing an oval, triple phosphate calculus. The left ureter is slightly dilated. The left kidney is hypertrophied; its medullary portion contained some incipient abscesses, and its capsule peeled off easily (it is still attached to the pelvis). The right kidney is but half its normal size; its glandular tissue has almost disappeared; and its pelvis, calyces, and infundibula are greatly dilated (ureter wanting).—From a man of 30." (Colles.) *Presented by* Professor S. B. Partridge.

22. Bladder and kidneys of Narain Dass (Hindu), aged 40. The mucous membrane of the bladder is greatly thickened, and all its coats hypertrophied. Lodged in the fundus is a phosphatic calculus the size of a large walnut. Both ureters are much dilated. The left exhibits a very curious disposition of its lining membrane into valve-like foldings, placed about two inches apart, for the whole length from bladder to kidney. Its channel presents corresponding alternate contractions and dilatations. The right ureter is also dilated, but the inner

surface is smooth, and shows no valvular plications. The left kidney is very extensively atrophied and disorganised. The secreting structure is reduced to about a fourth of an inch in thickness, and in parts has completely disappeared. The right kidney exhibits compensatory hypertrophy, and is infiltrated, both superficially and deeply, with numerous small abscesses. The whole organ is in a state of acute suppurative disorganisation.

23. "A preparation illustrating the incision in the prostate after a fatal operation of lithotomy. The gland is shreddy and gangrenous around the wound. There is also seen a stricture just in front of the bulb of the urethra, opposite to the cavity of a small abscess. Great thickening and contraction of the bladder." (Ewart.) *Presented by Professor J. Fayer.*
24. "Thickened and contracted bladder, from a Hindu, aged 38, who died on the eleventh day after a calculus, weighing 718 grains, had been removed by lithotomy. The left ureter is greatly dilated; the left kidney atrophied. The right kidney and ureter are of normal size." (Colles.)
25. The bladder and kidney of an elderly native, operated upon for stone. No urine was secreted from the time of the operation to death (about 40 hours) which was associated with uræmic symptoms.
"The bladder is much thickened. Its neck has been opened by a free incision, bounded posteriorly by undivided prostate. Anteriorly the wound reaches to the bulb, and, the stone having been a large one (over two ounces in weight), there has been some laceration of the parts.
"Both kidneys are slightly lobulated and smaller than natural. The cortical portion narrow and very pale; medullary portion destitute of its usual striated appearance. There is a large cyst (now collapsed) with thin walls in the right kidney, and several the size of a pea in the left kidney." (Colles.)
26. "Bladder and urethra of a native operated on for stone, and who died from fever with quasi-pyæmic symptoms. No purulent deposits were found on *post-mortem* examination, but the kidneys were incipiently granular.
"The bladder and urethra are preserved to show the wound made in lateral lithotomy. The bulb is slightly notched by the incision." (Colles.)
27. A preparation preserved chiefly to illustrate the morbid anatomy of acute pelvic cellulitis and peritonitis following the operation of lithotomy. The surfaces of the bladder, rectum, &c., are covered with patches of recent lymph, and the sub-peritoneal cellular tissue presents a dark, gangrenous condition, is much softened and swollen, and, on incision, was found infiltrated with thin yellowish pus. The bladder is contracted; its walls thickened. The mucous membrane is highly vascular, inflamed, in parts incipiently sloughy. There is much laceration of its neck, associated with a ragged and unhealthy-looking wound in the perineum (that of the operation). The kidneys are contracted

and highly granular. The secreting structure much wasted, especially in the right kidney. The pelves and calyces wide and expanded. The right kidney has two ureters, which emerge separately from the hilum, pass downwards, and only unite about half an inch above the bladder, to terminate by a single orifice in the usual position.

The patient was a Hindu, aged 40. The stone weighed a little over two ounces. There was not much bleeding at the time of the operation. He did well for forty-eight hours. The third day the temperature rose to 103·8° F. Hiccough, vomiting, great prostration, and severe hypogastric pain soon followed, and he died on the sixth day after the lithotomy.

(See further, "Surgical *Post-mortem* Records," vol. I, 1877, pp. 373-74.)

28. Bladder and urethra of a native aged 40, showing the results of a successful lateral lithotomy. The patient died from broncho-pneumonia and catarrhal dysentery. The wound in the perineum (indicated by a glass rod) had all but cicatrised, and was quite healthy. (See further, "Surgical *Post-mortem* Records," vol. I, 1880, pp. 667-68.)

29. Preparation showing the effects of lithotritry upon a phosphatic calculus in the bladder of an old man. The stone has been broken up into more than twenty pieces, and must have, when entire, almost completely filled the bladder.

The walls of this viscus are thinned and contracted. The inner surface exhibits a series of shallow depressions, suggestive of the close application of the same upon a broadly-faceted calculus. There is senile hypertrophy of the prostate gland.

The patient died from general peritonitis a few days after the operation.

—(Webb's *Pathologia Indica*, No. 268, p. 211.)

30. Urinary bladder with a calculus, the size of a walnut, superficially crushed by the lithotrite. The external surface or crust of the stone is opaque-white, phosphatic, rough, and broken down at parts; but the main bulk of the calculus is entire, and has not been crushed. The mucous membrane is vascular, injected, a good deal softened. The muscular coat is hypertrophied. The lateral lobes of the prostate are enlarged, and contained a little purulent fluid. The patient, a native male, aged 25, died from acute suppurative nephritis after the first attempt at lithotritry. (See further, "Surgical *Post-mortem* Records," vol. I, 1880, pp. 683-84.)

31. A preparation illustrating the disastrous results of lithotritry, attempted to be performed in a small and contracted bladder, upon a flattened, and chiefly phosphatic calculus, which occupied and was firmly imbedded in the cervical portion, where, as may be seen in the preparation, it had formed a pouch for itself.

The whole thickness of a portion of the posterior wall of the bladder, near the fundus, has been torn out, resulting in a perforation, through which the little finger may be passed, and causing death from extravasation of urine into the peritoneal cavity,

and consequent acute general peritonitis. (*See further, "Surgical Post-mortem Records,"* vol. I, 1880, pp. 737-38.)

32. Specimen showing a recto-urethral fistula, which had existed for three years, and was the result of a wound from a piece of pointed bamboo forcibly thrust into the bowel. "Urine used to flow through the rectum, and no instrument could be passed by the urethra. Perineal section was performed, but proved fatal."

The bladder is seen opened anteriorly, and a glass rod has been passed into the fistulous track between it and the rectum.

Presented by Professor S. B. Partridge.

33. Recto-urethral fistula. The rectum, bladder, and urethra of a native male patient, aged 25. Examining the urethra, from before backward, there is found slight thickening with constriction of the canal about two and a half inches from the meatus. Half an inch beyond this are two large fistulous canals, each about an inch and a half in length, in the floor of the urethra, lying parallel to each other, and having a strip of the entire thickness of the canal here isolated between them. These fistulæ pass downwards and backwards into the perineum,—that on the right for a short distance only, that on the left burrowing deeply, and after following a circuitous route terminates in the rectum, three inches above the anal aperture, a little to the left of the median line. The opening here is smooth and rounded, and looks as if produced by a catheter.

The bulbo-membranous portion of the urethra is much torn, and scored in various directions by false passages. Some of these lead, on either side, into the prostate gland, and one or two burrow beneath the mucous membrane of the neck of the bladder.

It is difficult, in the disorganised and lacerated condition of the parts, to ascertain the exact site of the original stricture, but probably it existed in the membranous portion of the canal. During life the urine passed in drops through the urethra and also per rectum. "On introducing a catheter it was found to deviate towards the left side, plunging deeply between the rectum and bladder, but could not be made to enter the latter." Perineal section was performed (the opening is indicated in the preparation by a thin piece of tale), but the patient died with symptoms of blood-poisoning (septicæmia). (*See further, "Surgical Post-mortem Records,"* vol. I, 1879, pp. 589-90.)

34. Greatly hypertrophied condition of the urinary bladder, with ulceration, superficial sloughing, great vascularity and rigidity of its lining mucous membrane—all the results of long-standing stricture of the urethra.

In the bulbous portion of the urethra there are two small openings communicating with an external fistula in the perineum, and a third in the membranous portion, a little to the left of the median line, leading into a sinus, which also runs backwards towards the perineum. There is no stricture in this part of the urethra, but the meatus is much contracted, and in the spongy portion of the canal (from two inches behind the fossa navicularis

to the bulb) the walls are hard and gristly on section, and much constricted.

The patient, an Irishman, aged 51, had suffered from stricture for about four years. Was twice admitted into hospital for treatment. On the first occasion, Holt's operation was performed, and gave relief. On the second occasion, gradual dilatation by bougies was resorted to, and the man again discharged relieved. Neglecting, however, in spite of warnings, to keep the canal pervious by the constant use of the catheter, he had to be admitted for the third time, three weeks previous to his death. The stricture had been allowed to contract, an abscess had formed in the perineum, fistulae existed here, and most of the urine was discharged through them. Perineal section was performed, and again complete relief afforded. The wound had nearly healed when he was attacked with uræmic symptoms, and died comatose. Acute suppurative disorganisation of both kidneys was discovered *post mortem*. (See further, "Surgical *Post-mortem* Records," vol. I, 1876, pp. 291-92.)

35. The urethra and bladder of a native male (Hindu) patient admitted into hospital with extravasation of urine, producing sloughing of the prepuce, scrotum, &c. He died from septicæmia. (1) The urinary bladder is strongly contracted, all its coats—but particularly the muscular—much hypertrophied, the latter being half an inch in thickness. The inner surface is thrown into prominent rugæ or folds. (2) There is a perforation in the floor of the urethra, about an inch from the meatus. This leads into gangrenous tissue surrounding the body of the penis, and was continued into the scrotum, perineum, and abdominal wall. (3) The meatus itself is much contracted—so small, in fact, that it scarcely admits a probe. (4) An inch and a half behind this is a long irregular stricture (rather more than an inch in length). The urethral canal is again free for an inch, after which another stricture, occupying the bulbous and membranous portions, is met with. It is very hard and fibrous. (See further, "Surgical *Post-mortem* Records," vol. I, 1878, pp. 533-34.)

36. "Bladder, pubis, penis, and scrotum, illustrating an old stricture of the urethra situated about an inch and a half from the meatus urinarius externus, and infiltration of the urine into the subcutaneous areolar tissue of the scrotum, which took place through the perforating ulcer seen immediately behind the right side of the bulb, indicated by a red glass rod. The parietics of the bladder are much hypertrophied." (Ewart.) *Presented by* Professor R. O'Shaughnessy.

37. Urinary bladder, prostate, and a portion of the urethra of "a European, J. Y—, age from 30 to 40," who died in Howrah Hospital on the 20th of May 1837. (Webb's *Pathologia Indica*, No. 222, p. 209.)

The specimen shows (1) a tight, organic stricture of the urethra situated in the bulbous portion of the canal. (2) Great dilatation of the urethra behind the stricture, so that it is hollowed out to form a cavity the size of a walnut, and projects backwards beneath the middle lobe of the prostate. (3) Hypertrophy of the bladder, with great thickening, especially of

the muscular coat; the mucous membrane, on the contrary, is thinned, and at the fundus presents a cribriform appearance, due to a "kind of hernial protrusion of the thinned mucous lining between the disparted fasciculi of the muscular coat."

38. The genito-urinary organs of a native male, aged 45, admitted into hospital in a moribund condition with retention of urine. He was relieved by catheterism, and lived for three days in a very weak and prostrated condition. The preparation exhibits (1) a narrow organic stricture at the junction of the membranous and bulbous portions of the urethra, with false passages on either side, which run onwards into each lateral lobe of the prostate. (2) The prostate itself, soft, swollen, and pus-infiltrated. The prostatic urethra dilated. (3) Thinning and atrophy of the coats of the bladder, with a highly vascular and injected condition of the lining (mucous) membrane—in the fresh state; which also shows a reticulated and cribriform appearance at the fundus. (4) Both kidneys are enlarged, highly vascular, and juicy. Their surfaces and entire parenchyma thickly infiltrated with small circumscribed abscesses, varying in size from a millet-seed to a pea—(acute suppurative nephritis or "surgical kidneys").

39. The urinary bladder, urethra, and scrotum from a fatal case of extravasation of urine,—a native male, aged 32, who died within an hour of admission into hospital. Perineal section was performed. The patient had suffered from stricture (following gonorrhœa) for two years. He had not passed water for 48 hours. Catheterism was tried by native practitioners before admission into hospital, but unsuccessfully. When admitted, the perineum, scrotum, penis, and lower part of the abdomen were swollen, œdematous, and infiltrated with urine, evidently from laceration of the urethra.

In the preparation, the bladder is seen to be small and closely contracted. The muscular coat is enormously hypertrophied—measures fully half an inch. The prostatic and membranous portions of the urethra are dilated, and exhibit numerous false passages on either side of the veru montanum, one of which leads directly into the sinus pocularis, and extends backwards into the middle lobe of the prostate. Another small round perforation of the floor of the urethra passes outwards into the right lateral lobe. The whole of the prostate gland was found dark and sloughy, infiltrated with fœtid purulent fluid. At the junction of the membranous and bulbous portions, the urethral canal is much narrowed, and the mucous lining thick and opaque. It is at this spot that a tear in the floor of the urethra is seen, an inch in length, running a little to the right of the median line, and opening into the perineum by an orifice capable of admitting a crow-quill. This appears to have been the result of forcible catheterisation, and readily accounts for the extensive extravasation of urine. (The larger incision on the left side, communicating with the perineum, is that made by operation after the patient was received into hospital). There were multiple small

abscesses and points of suppuration in both kidneys ("surgical kidneys"). (See further, "Surgical *Post-mortem* Records," vol. I, 1875, pp. 151-152.)

40. The urinary bladder and urethra of a native male, aged 50, who died in hospital from exhaustion and septicæmia following extravasation of urine into the perineum, scrotum, &c. The mucous and muscular coats of the bladder are hypertrophied,—the former much plicated and softened. As regards the urethra, the first two inches are healthy, beyond which the canal becomes exceedingly narrowed, owing to the presence of a long-standing organic stricture, which extends from this point backwards to (and including) the membranous portion. The new-formed tissue external to the mucous membrane is firmest and thickest at the bulbous portion of the urethra, cutting here almost like cartilage. Just in front of the bulb, the lining membrane of the canal exhibits two longitudinal lacerations, evidently produced by forcible catheterisation. The whole of the bulbous portion is sloughy and shreddy, riddled with false passages, and on the right side has given way, causing extravasation of urine into the perineum and scrotum, from the effects of which the man died. The lateral lobes of the prostate are swollen and soft. ("Surgical *Post-mortem* Records," vol. I, 1878, pp. 461-62.)
41. Bladder and urethra of a native male patient (Hindu), aged about 35, showing (1) a stricture situated about two inches anterior to the bulb of the urethra. (2) Several false passages in the membrano-prostatic portion of this canal, which is dilated so as to form a pouch capable of containing half a walnut. This portion of the urethra has doubtless been the seat of organic stricture, but is now so lacerated that it is impossible to distinguish its exact site and character. Of the false passages, one leads downwards and to the right into the perineum, another backwards and to the right into the corresponding lateral lobe of the prostate; a third enters the left lateral lobe of this gland; and a fourth, perforating the mucous membrane of the canal, just above the veru montanum, passes onwards for about an inch, undermining the mucous membrane of the neck of the bladder, and perforates the same to enter the cavity of this viscus. All the above are evidently due to improper and forcible catheterisation, the patient having been treated by several native practitioners (quacks) prior to admission into hospital. (3) The urinary bladder was highly congested and ecchymosed; the muscular and other tissues are greatly thickened and hypertrophied. (4) There is also much inflammatory thickening of the loose cellular tissue around the neck of the bladder; and (5) an extension of the same to the recto-vesical pouch or fold of peritoneum, which was coated by a thick layer of recent puriform lymph. There was, moreover, general acute peritonitis. The patient was admitted in a very low and prostrated condition. No difficulty was experienced in passing a full-sized catheter into the bladder. He died from peritonitis.

42. The urinary bladder and urethra of an East Indian patient, aged 40, who had long suffered from organic stricture, and died in hospital of acute dysentery. The bladder is contracted and its walls much thickened. At the neck and base the mucous membrane is seen to be perforated in four or five situations,—the openings leading into narrow sinuses, which burrow in the submucous tissue, and communicate with the prostatic portion of the urethra. These are obviously due to catheterism. The floor of the prostatic portion of the urethra is considerably torn by false passages. At the junction of the membranous and bulbous portions is a dense cartilaginous stricture. The rest of the urethra is healthy. (*See further, "Medical Post-mortem Records,"* vol. III, 1879, pp. 253-54.)
43. "Bladder and urethra of a European patient, the subject of urethral stricture for five years. He was admitted on the 1st August 1864; No. 3 catheter was passed with difficulty on the 2nd August, and No. 9 on the 11th. Rigors followed the passing of the latter, and the patient died with symptoms of pyæmia on the 13th. (Colles.)
The stricture is situated in the membranous portion of the urethra, and there are two or three superficial lacerations of the mucous membrane of the neck of the bladder.
44. The urethra and bladder of a European patient, J. W—, aged 40, who was operated upon twice for impermeable stricture. Perineal section was performed on both occasions, at an interval of eight years. The patient died in hospital three months after the last operation. The preparation shows (*a*) the cicatrix in the perineum left by the operations; (*b*) a hard, dense, bridled stricture in the membranous portion of the urethra; and (*c*) a highly contracted small bladder, with excessive hypertrophy of the muscular coat. *Presented by* Professor J. Fayer.
45. The bladder and urethra of a European patient, aged 39, showing a dense, bridled stricture at the membranous portion of the urethra, with laceration of the canal anterior to it, the result of catheterisation. The stricture is so narrow that a probe is passed with difficulty through it. Behind the stricture the prostatic portion of the urethra is dilated, and scored by false passages, especially towards the left side. The lateral lobes of the prostate are enlarged. The urinary bladder exhibits great hypertrophy of all its coats. (*See further, "Surgical Post-mortem Records,"* vol. I, 1876, pp. 257-58.)
46. Preparation showing a tear in the floor of the urethra, about three inches from the meatus, leading into two or three false passages on the right side of the membranous portion, which was found highly congested and vascular, but with no evidence of organic stricture.—From a native male, aged 20, who died from intestinal obstruction. During life there was inability to pass urine, perhaps owing to the congested condition of the urethra and spasmodic contraction. The false passages are the results of catheterisation.

47. The urinary bladder, scrotum, and urethra from a fatal case of extravasation of urine, due to forcible catheterisation, and consequent laceration of the urethral canal.

The patient, a native male, aged about 40, had bad gonorrhœa ten years ago, which was followed by permanent but slight stricture. For the last ten days (prior to admission) was suffering from fever, and yesterday, not being able to pass water, a "native doctor" was summoned, who attempted to pass a catheter into the bladder. No relief was obtained, and extravasation of urine took place into the cellular tissue of the scrotum, perineum, &c. In this state the man was brought into hospital. Although free incisions were made into the infiltrated tissues, and a catheter passed into and retained in the bladder, the patient gradually became low, and died from acute diffuse cellulitis and septicæmia.

In the preparation, the bladder is seen strongly contracted, and its coats much thickened. There are numerous false passages in the membrano-prostatic portion of the urethra, while the whole of the bulbous portion, and up to within $2\frac{1}{2}$ inches of the meatus, this canal is extensively lacerated.

In the fresh state, presented a highly putrid, gangrenous, and softened condition. The lacerations extend, on either side of the injured portion of the urethra, into the perineal and scrotal tissues, thus accounting for the rapid, intense, and fatal urinary extravasation. (*See further, "Surgical Post-mortem Records,"* vol. I, 1875, pp. 217-18.)

48. "Bladder and urethra. The former is greatly hypertrophied. An almond-shaped calculus is seen occupying the site of the prostate gland. One extremity points into the bladder at the meatus urinarius internus, the other impinges upon the membranous portion of the urethra. Anterior to this, and in the membranous portion, there is a sacculated dilatation, which contained a calculus, fragments of which are seen lying at the bottom of the bottle." (Ewart.) *Presented by* Dr. W. A. Green.
49. A preparation illustrating enlargement of the prostate gland, especially of its third or middle lobe,—so commonly met with in advanced life.—From a native male, aged 65.
50. Senile hypertrophy of the prostate gland. The lateral lobes are especially enlarged, and, on section, firm and fibrous-looking. The urinary bladder is contracted, and its walls thickened. In the recent state, the mucous membrane was highly vascular and ecchymosed. During life there was much cystitis, the direct result of this hypertrophied condition of the prostate, and a consequent inability to empty the bladder completely. No stricture.—From a native male, aged 45. (*"Surgical Post-mortem Records,"* vol. I, 1876, pp. 251-52.)
51. Chronic hypertrophy of the prostate gland (lateral lobes). The structure, on section, is firm and fibrous-looking; it is infiltrated with small calcareous concretions and corpora amylacea. The urinary bladder is contracted, and its walls thickened. The mucous membrane was very vascular and injected, with a ring of small superficial ulcers at the neck.—From a native male patient, aged about 40.

52. The genito-urinary organs of a native patient, aged 55, who died in hospital.

He was admitted with retention of urine and bleeding from the urethra, the result of catheterism attempted by the "native doctor" of his village, the day previous. It was said that Nos. 1 and 2 silver catheters were used. A prostatic catheter was passed on admission, and about four pints of bloody urine drawn off. The distended bladder had reached the umbilicus. The prostate was found much enlarged. The bladder was relieved regularly by catheterism in hospital, but the patient became very low and gradually comatose. He died on the fourth day after admission.

On incising the urethra (*post mortem*) a very distinct, hard, and firm constriction is met with about two inches from the meatus; and, when the canal is laid open, an artificially torn stricture is found here, the rent in the mucous membrane being quite three-quarters of an inch in length. The submucous tissues are thickened. The canal beyond is, as far as the bulb, fairly healthy, but the whole of the membranous and prostatic portions of the urethra are scored with false passages, which freely enter the lateral lobes of the prostate. All three lobes of the prostate are greatly enlarged, the lateral lobes being each about the size of a duck's egg, the middle a little smaller. The gland-tissue is found abnormally developed and succulent, but not pus-infiltrated; and, on section, broad fibrous bands are seen intersecting each other throughout the lateral lobes. The middle lobe seems to have undergone similar changes, and its upper and anterior surfaces are deeply grooved. These grooves or furrows have torn and ecchymosed margins, the results, evidently, of forcible catheterisation. The upper surface has been perforated in the same way, and shows no less than six ragged openings leading into the bladder. This lobe fills up and obstructs the neck of the bladder. The latter was found occupied by broken down, soft, dark, blood-coagulum mixed with urine (about half a pint). The mucous membrane intensely vascular and ecchymosed; the submucous—especially the muscular—tissues greatly hypertrophied. The ureters are dilated, particularly their pelvic expansions in the kidneys; their lining membrane very vascular and inflamed-looking. The secreting structure of both kidneys is atrophied; the renal parenchyma generally abnormally vascular and juicy; the surfaces slightly rough, granular, mottled, and exhibiting a few small simple cysts. No suppuration.

Examined microscopically, sections from the prostate gland show great hypertrophy of the proper structure, especially of the fibro-muscular tissue separating and supporting the gland follicles. The smooth muscular tissue is much thickened, and its nuclei abnormally numerous. The gland spaces, lined by columnar epithelium, are in parts dilated; in others, apparently, compressed and contracted. Blood vessels are numerous and large, particularly in the hypertrophied middle lobe, the structure of which is almost uniformly stained of a dark red colour from blood extravasation. There is no new or morbid cell growth. (*See further, "Surgical Post-mortem Records,"* vol. I, 1877, pp. 391-92.)

53. The bladder and urethra of a native (Hindu) male, aged 42, who died of acute dysentery on the twelfth day after the operation of lithotomy. The incision in the perineum is indicated by a glass rod. Its margins were found superficially sloughy. It communicates with the membranous portion of the urethra, which is much lacerated, as also the left side of the prostatic portion. The prostate is enlarged, particularly its middle lobe, which may be seen projecting into the neck of the bladder, and forming here a fungus-like excrescence, nearly as large as a walnut. In the removal of the stone this middle lobe seems to have been almost completely divided. (*See further, "Surgical Post-mortem Records,"* vol. I, 1880, pp. 669-70.)
54. "Abscess of the prostate, which had led to extensive disorganisation of the gland. The parietes bulge greatly towards the right side. The left ureter is much dilated, owing to obstruction at its termination in the bladder, where a fungous growth* is seen projecting into its cavity. That of the opposite side, though slightly enlarged, is quite pervious. There seems to be an ulcerated opening into the right vesicula seminalis. The bladder exhibits thickening of its mucous and muscular tissues, by which its natural capacity has been very considerably diminished." (Allan Webb's *Pathologia Indica*, No. 218, p. 211.)
55. Urinary "bladder of a native woman, which came away *en masse* as a slough. The patient was admitted with typhoid symptoms. The neck of the bladder is much thickened and partly ulcerated. The viscus has been opened from behind. Above and anteriorly it retains what seems to be a part of its peritoneal coat." (Colles.) *Presented by* Professor D. B. Smith.
56. A specimen showing laceration of the urinary bladder during the operation of ovariectomy. A rent, through which three fingers may be passed, exists on the posterior surface. This was only discovered *post mortem*. The patient, a native female, aged 26, survived the operation for about 36 hours. Death took place from extravasation of urine into the peritoneal cavity, and consequent acute and general peritonitis. (*See further, prep. No. 94, Series XIV, and "Obstetric Post-mortem Records,"* vol. I, 1880, pp. 735-36.)

* Fungus-like excrescence of the thickened mucous membrane.—J. F. P. McC.

SERIES XIII.

INJURIES AND DISEASES OF THE MALE
ORGANS OF GENERATION.

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- 2.—CHRONIC ORCHITIS, 48.
- 3.—HYDROCELE, 49, 50,† 51,† 52, 53, 54,† 55, 56, 57, 58, 59,† 60.‡
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9.—MORBID GROWTHS :

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1. "An incised wound extending the whole way round the prepuce. On the upper surface it is superficial, but it is deep on the under aspect, dipping down into the corpus spongiosum, not, however, penetrating the urethra. The boy is supposed to have died from the hæmorrhage which followed an unsuccessful attempt at circumcision." (Ewart.) *Presented by* Dr. Herbert Baillie.
2. "A good specimen of elephantiasis preputii, involving the scrotum subsequently. The tuberculated condition of the skin so characteristic of these growths when they arise from the prepuce is well seen." (Colles.) *Presented by* Professor J. Fayrer.
3. "Elephantiasis seroti et penis. The skin is greatly thickened and fissured, giving to it the appearance of a badly executed pavement. The epithelial lamina is the one-twelfth of an inch, while the cutis vera and subjacent cellular tissue measure fully three-quarters of an inch in thickness. The hair has generally become atrophied, and fallen off." (Ewart.)
4. "Penis of a lad of 14 removed on 31st December 1865, near the pubis, for elephantiasis preputii of three years' duration. It has been split open from below, and the course of the urethra is marked by a black glass rod. The penis and glans are healthy; the disease, as usual, only affecting the prepuce. The mass, when removed, weighed $7\frac{1}{2}$ ounces, and measured seven inches round its thickest part." (Colles.) The preparation illustrates the formidable operation considered necessary, in former times, for the removal of a simple growth of this nature. *Presented by* Assistant Surgeon B. W. Switzer, F.R.C.S.I., Civil Surgeon, Kohat.
5. A preparation consisting of about two inches of the anterior portion of the penis, including the prepuce and glans, amputated for supposed malignant disease. From a native male patient, aged 60. There was a history of syphilis. The preputial orifice is much contracted, and the foreskin almost entirely adherent to the glans and corona glandis. A quantity of purulent and sebaceous, highly putrid secretion occupied the slight interspace between these parts. The surface of the glans and its orifice are ulcerated, and a series of small, shallow, unhealthy ulcers extends along the urethral canal.

There is no evidence, from microscopic examination, of any epithelial (cancerous) proliferation from the surface or in the substance of the glans penis, prepuce, or corpus cavernosum. The ulcerated condition of the parts described, appears to be the result of prolonged irritation and inflammation from the retention of much sebaceous secretion beneath a partially adherent and very tight prepuce.

The patient made a good recovery.

6. Phagedænic ulceration of the penis,—probably syphilitic. About an inch of the anterior portion of the organ has been removed, under the impression that the disease was epitheliomatous. There is, however, no evidence of cancerous structure in the ulceration. Two large ulcers are seen,—one, situated on the sulcus of the glans, just below the frenum, which has destroyed a considerable portion of the glans substance, and laid open the urethra. It presents an eroded and irregular margin, and, at one part, supports a wart-like growth, the size of a small hazel-nut. The other ulcer is separated by a narrow strip of unaffected skin from that just described. It also has an eroded and slightly fungoid appearance. The orifice or meatus of the penis is much contracted. There is no prepuce.

Microscopically examined, the epidermis at the margins and surfaces of the ulcers shows exuberant growth, and contributes principally to the fungoid appearance of the larger ulcer. There is, however, no deep infiltration of epithelium. The subpapillary layer of the skin is found densely infiltrated with a small-celled or nuclear growth,—apparently especially aggregated in large amount around the capillary vessels of the part, which are enlarged and numerous. The appearance is very like that observed in connection with the development of hard chancre upon the prepuce or glans.

7. "A calculus as large as a small hazel-nut, impacted just behind the prepuce. It is *in situ*, and the prepuce is seen much tumefied. The stone has escaped from the urethra, and now appears underneath the integument." (Ewart.)

The concretion referred to does not appear, on examination, to be a urethral (or vesical) calculus. It is very improbable that a "stone" of this size could escape per urethram, and, moreover, its structure is found to consist principally of soft sebaceous material with an infiltration of fine calcareous particles. It seems, therefore, to have resulted from the accumulation of sebaceous material beneath a phymotic prepuce (with a very contracted orifice), which substance has slowly formed a concretion, into which calcareous deposit has taken place.

8. Phagedænic, syphilitic ulceration of the prepuce. The latter has partially sloughed, exposing the glans penis, and then cicatrised around it. The meatus is very small and contracted,—scarcely admits the end of a probe.

The patient, a native male, aged 30, died in hospital from pneumonia.

9. Specimens of hard chancre affecting the prepuce, which, in each case, has been removed entirely. From two native out-patients.

Examined microscopically, the cutis to a slight extent, and the subcutaneous tissues more especially, are found infiltrated with a small-celled or nuclear growth

The proliferation is most abundant in the deeper layers,—below the ulcerated surface, (where both cuticle and cutis vera have perished, and are replaced by pus-corpuseles). The blood vessels are large, and the nucleated growth seems to be particularly abundant in connection with them. The “nuclei” are about the size of leucocytes, and stain readily with carmine.

Presented by Dr. E. Lawrie.

10. An indurated Hunterian chancre of the prepuce removed, with a portion of the latter, from a native male (out-patient), aged about 30.
11. A specimen of a hard or Hunterian chancre of the prepuce, removed, with the whole of the latter, by circumcision.—From an adult native.
12. Circumcised phymotic prepuce covered with soft sores (chancres).—From a native out-patient, aged 25.
13. Four specimens of circumcised prepuces infected with soft chancres in various stages of ulceration. Obtained from native out-patients attending the surgical dispensary of the hospital.
Presented by Dr. E. Lawrie.
14. A warty growth or papilloma of the prepuce.—From a native male (a carpenter), aged 30. It first made its appearance as a small pimple near the frenum preputii. There was no history of syphilis.

The growth is about the size of a goose-egg. Its external surface is rough, nodulated, and warty. Shows no ulceration. Feels hard, firm, and horny. On section, the colour is pinkish-white; the warty character is continued into the tumour-substance deeply,—the upper two-thirds being composed of a papillary structure, the interstices of which are filled with a soft, white, waxy material—altered epithelium and fatty matter; the lower third is smooth and fibrous-looking, and exhibits the sections of several loops of blood vessels.

These appearances are confirmed on microscopic examination. The epidermal layer of the skin is chiefly affected. The epithelial proliferation is very abundant, and numerous “nests” or “globes” are scattered throughout the same. The papillæ are well defined, but do not seem to extend deeply into the subjacent cellular tissue. The blood vessels are large; and both the fibrous and elastic tissue elements are strongly developed. The firmness of the growth, and the limitation of the epithelial proliferation to its legitimate (epidermal) matrix, indicate a warty, not cancerous, structure.

15. Epithelioma of the prepuce. A flattened fungous growth, with very exuberant, cauliflower-like protuberances, separated by deep and narrow fissures. Consistency soft—readily crumbling under pressure of the fingers.

All the characters of true epithelioma are well seen in microscopic sections. There are numerous “nests,” and deep epithelial prolongations.

A small portion of the glans penis is also involved. No history.
Presented by Professor J. Fayrer.

16. Epithelial carcinoma of the prepuce and glans penis. The growth is large, profusely luxuriant, and consists of huge papillated excrescences with deep fissures between them, forming a kind of

thick fringe or rampart around the glans penis. The latter is firmer in consistency, but its surface is also warty or granulated. The urethral orifice is indicated by a glass rod. The penis has been amputated one inch behind the corona glandis.

Under the microscope, sections taken from both glans and prepuce exhibit luxuriantly proliferating epithelial cylinders, with numerous nests (some visible to the naked eye), and all the other characters of epithelioma. In the deeper portions of the growth an abundant nuclear infiltration is observed, and also, very large and thin-walled capillary blood vessels.

17. "Epithelioma of the penis, removed from a European." The growth involves the whole of the prepuce, forming a fungous, highly papillated ring or corona round the glans. The latter is also involved, and on its inferior aspect deeply ulcerated. The structure is quite characteristic. *Presented by* Professor J. Fayrer.
18. A very typical specimen of epithelioma of the penis, involving both prepuce and glans, and forming an irregularly rounded fungating mass, the size of a small orange. No history.
19. Epithelioma of the penis, from a Hindu, aged 40. "The disease is said to have been of 18 months' duration. No history of syphilis."

This is a mass, about the size of one's fist, having an irregularly conical outline, and greatly tuberculated, and (in parts) ulcerated surface, the latter, in particular, at the situation of the meatus. The whole of the glans penis is involved. On longitudinal section, the cauliflower-like structure of the growth, with its very greatly hypertrophied papillæ, is well seen. The urethral canal is almost obliterated, and the disease has extended backwards into the corpora cavernosa,—but anterior to the part where amputation has been performed.

On microscopical examination, all the characters of a true, luxuriantly proliferating epithelioma are found. The papillary hypertrophy and deepening are most marked. Epithelial "nests" abundant, and a free nuclear proliferation in the sub-papillary strata of the cutis. Blood vessels large and numerous. In parts, the epithelial cells are noticed to have very finely but distinctly serrated margins, and to be closely interlocked. These serrated cells seem to be the older ones, for their nuclei are indistinct or absent, and their protoplasm highly granular from fatty metamorphosis.

Presented by Professor Gayer.

20. Epithelioma of the penis,—a five months' growth.—From an East Indian, aged 62. Amputated by the galvanic écraseur.

The growth affects the whole of the glans, which is enlarged, distorted, and tuberos, forming a mass the size of a duck's egg, or a little larger. The consistency is soft. The urethral canal is much contracted owing to the concentric pressure of the tumour. Examination, under the microscope, reveals all the characters of quickly-growing, true epithelioma. The cell-proliferation is abundant, and reaches deeply into the subcutaneous structures. There are numerous "globes," small and large, and considerable development of the dermal blood vessels.

21. Epithelioma of the penis. The prepuce is phymotic, and much contracted at the orifice. On one side, two large fungating

growths are seen, originating in the glans penis (concealed), and projecting through the prepuce, which is ulcerated and secondarily involved.

The structure, microscopically, is typically cancerous (epithelial). No history.

22. Epithelioma of the penis—"from a native male patient." The disease affects the glans and corona glandis, and extends for a short distance into the body of the organ beyond. The structure is quite typical on microscopic examination, and the growth forms a rounded, slightly lobulated, creamy-white excrecence, which is very soft in consistency, and crumbles readily on pressure and section. There is no prepuce—probably owing to circumcision.

23. "Specimen illustrating double penis, removed from a child who had also imperforate anus. The rectum terminated in the fundus of the bladder. There is a globular mass underneath the scrotum, which may possibly have been a superfluous scrotal bag." (Ewart.) *Presented by* Dr. Cheek.

24. "Elephantiasis scroti. The growth is large, and shows well the immense hypertrophy which the integument has undergone. The epithelial layer is granulated and fissured, mostly coloured with the dark pigment of the native skin; but in some places completely white and destitute of pigmentary deposit.*****

The hair follicles are much increased in size, but the scattered hairs are short and stunted. Beneath the integument, the outgrowth consists of an immense accumulation of fibrous tissue, the bands of which can be distinctly seen." (Ewart.) *Presented by* Professor J. Fayrer.

25. "Elephantiasis scroti. On the front aspect the epithelial layer of the integument is seen enlarged into large lobules, varying from the size of a pea to that of a walnut. These lobulated masses are conical, having their narrow ends attached to the cutis vera, and their basal ends free. Viewed on the surface, they are square, oblong, or polyhedral, from pressure; and they are more or less devoid of pigmentary deposit.

On the other aspect, the surface of the skin is covered with smaller granulated eminences, also, to a great degree, devoid of pigment. The interior consists of hypertrophied dartos, fibro-cellular tissue, and unstriped muscular fibre." (Ewart.) *Presented by* Baboo Kasi Nath Datta.

26. "Elephantiasis preputii et scroti. The lobulated, and albinoid, or semi-piebald character, the outgrowth often assumes in the native, is well demonstrated." (Ewart.)

27. A portion of an elephantoid scrotum,—probably from a European. No history.

28. "Elephantiasis of the scrotum and penis. The skin and subcutaneous structures are hypertrophied. The prepuce is studded over with condylomatous excrecences." (Ewart.)

29. A good example of a small elephantoid growth of the scrotum and prepuce. The preparation is interesting as being one of the earliest specimens removed by the modern method of operation,

i.e., by excision of the morbid integumental structures only, the testicles being preserved. *Presented by* Professor J. Hayrer.

30. Elephantiasis of the scrotum and prepuce, weighing 19 ounces, and said to be of ten years' growth.—From an East Indian, H. K., aged 52. Preserved as a typical specimen of the disease occurring in an East Indian.

31. Elephantiasis of the scrotum and prepuce, weighing 25 ounces. Removed by operation from an Irishman, M. O'B., aged 40.

History.—The patient, born in Ireland, and of pure European parentage, came out to India as a child (at the age of eight years). Has had elephantiasis of the right leg for about the last 20 years.

This still persists, and appears to be extending upwards to the thigh. The scrotal hypertrophy commenced about five years ago. Has enjoyed fair health, with the exception of occasional attacks of "fever and ague,"—more frequent during the last five years. Has noticed the scrotum and leg to "swell" more after each such attack. Is ruddy-looking, and otherwise apparently quite healthy. Has always lived in Calcutta.

* Examined microscopically, the structure of the growth is found identical with that of the non-nœvoid variety, so common in the natives of Bengal. The hypertrophy of the smooth muscular tissue (dartos) is exceptionally well marked. The cellular infiltration is not as abundant or so uniformly distributed as in most typical specimens. The cutis proper exhibits great thickening.

32. "Elephantiasis scroti. The surface is much nodulated, and some of the nodules bled considerably before the tumour was removed." (Ewart.) This is a good specimen of the nœvoid, as distinguished from the simple variety of elephantoid growths of the scrotum. The surface is more softly and minutely lobulated, and the excrescences, in numerous situations, are vesicular or bullar rather than solid in character. From these there was doubtless the escape of sanguineous serum or lymph during life, referred to as "bleeding" in the description above given. The whole tumour has a reddish-brown colour, and may be said to resemble, somewhat, a gigantic raspberry. *Presented by* Professor S. B. Partridge.

33. A portion of an elephantoid growth of the scrotum, of nœvoid variety. The external surface is in parts ulcerated, in others raised into characteristic fungoid and softly tuberculated excrescences. Microscopic examination confirms the nature of the growth. The testicle—much atrophied and its structure greatly disorganised—is seen towards the lower part of the section of the tumour. *Presented by* Professor R. O'Shaughnessy.

34. A specimen of lymph-scrotum,—the so-called nœvoid elephantiasis, removed by the usual operation from an East Indian, aged 31. The skin of the scrotum is raised into larger and smaller, smooth, soft, rounded excrescences, many of which contain a clear or milky fluid. This escaped during life on puncture or

* For a detailed account of the minute structure of elephantoid growths, see Series XVII, (Tumours, &c.).

accidental abrasion, was found to be highly albuminous, and to contain numerous lymphoid corpuscles, leucocytes, a few red blood-cells, and filariæ (*F. sanguinis hominis* of Lewis). After removal, the whole of the scrotum and prepuce were carefully dissected and examined for a mature nematoid, but unsuccessfully. The structure, otherwise, is strictly characteristic.

35. A preparation showing the result of a successful operation for the removal of elephantiasis of the scrotum. The penis and testicles are seen re-covered by integument, which, although lacking in pigment in parts, and more rigid and cicatricial in character than normal, is nevertheless healthy. *Presented by* Professor J. Fayrer.
36. A similar specimen.
37. A preparation illustrating the appearances presented by the penis and testicles after a successful operation for elephantiasis scroti,—by the usual method. In this case the tumour was a large one,—weighing, just after removal, 29 pounds. The patient, a native, aged 48, made a good recovery, but, while still in hospital, was attacked with pneumonia, from which he died.
38. A similar specimen, from a native male, aged 23, who also recovered completely from the operation, but died subsequently of pneumonia.
39. Perfectly cicatrised condition of the wound after the removal of an elephantoid tumour of the penis and scrotum. The subject was a native adult, aged 35, who succumbed to a sudden attack of pneumonia, quite unconnected with the operation, and on the 53rd day after the latter, when he was, apparently, quite convalescent.
40. “Epithelial, cauliflower-looking excrescences removed from the scrotum of a native, supervening, from protracted irritation, upon elephantiasis scroti, believed to be innocent.” (Ewart.)

This is purely a warty growth, superadded to an already elephantoid scrotum. Examined microscopically, the papillomatous structure of the large, superficial, fungoid-looking mass is well defined. There are no “nests;” no epithelial proliferation beyond or deeper than the epidermal layer. Beneath this, the connective tissue and smooth muscular tissue of the dartos are found hypertrophied, the former also infiltrated with leucocytes and lymph-corpuscles; the lymph-channels dilated; the blood vessels large and numerous,—all these well-known characters of elephantoid structure are readily recognisable.—J. F. P. McC.

41. Scrotum of a native, showing a series of rounded warty growths, which on section, although exhibiting a characteristic papillary structure, are peculiar from having undergone considerable calcification.
42. “Extreme atrophy of the testes in a Hindu boy sixteen years of age. They seem to be mere flattened expansions of the cords, being about three-quarters of an inch long and a quarter of an inch thick.” (Ewart.) No history. *Presented by* Professor Allan Webb.

43. Atrophy of the testis due to the pressure exercised upon the organ, and interference with its nutritive supply, by the overgrowth of the scrotal tissues in elephantiasis,—a very common consequence or result of this disease. The atrophied testicle is not much larger than an almond, and may be seen dissected out of the surrounding parts, and supported by two glass rods.

44. Atrophy, with calcareous infiltration of the right testicle and spermatic vessels. From an aged native (æt. 60), operated upon for elephantiasis scroti. The testis is greatly atrophied. Its proper structure can only be distinguished at the upper part of the longitudinal section which has been made through it. At the lower part, the testicular structure has been replaced by a soft sebaceous mass, consisting principally of fat and cholesterine crystals. The tunica albuginea is greatly hypertrophied, and partially calcareous; and the spermatic vessels, having undergone similar transformation, can be seen as convoluted, varicose-looking, rigid tubes spread over the posterior aspect of the preparation.

45. Atrophy of the left testicle from a case of elephantiasis scroti. It was surrounded by a large hydrocele, and was so much disorganised as to necessitate removal. The spermatic tubules are much atrophied and infiltrated with fat. A cyst, the size of a sparrow's egg, is seen at the situation of the globus major of the epididymis,—probably a spermatocle. A portion of the greatly thickened tunica vaginalis is left *in situ*. The elephantoid scrotum was of thirteen years' growth, and weighed, on removal, 13 pounds. *Presented by Professor Gayer.*

46. Atrophy of the testicles, and great thickening of the tunicae vaginales, from a case of scrotal tumour (elephantiasis);—a native aged 30. The testes and coverings being diseased were removed at the time of the operation (excision of the growth).

Both the tunica vaginalis and tunica albuginea are greatly hypertrophied and partially calcified. Both testes are reduced in size, and microscopic examination of their structure shows considerable atrophy of the tubuli semeniferi, with fatty degeneration of their epithelial contents.

There was a small, and evidently old, hydrocele on each side.

The atrophic and degenerative conditions of the testicles are attributable to the compression exercised by the greatly thickened tunics upon the nutrient blood vessels of these organs, and the consequent interference with their proper vascular supply.

47. Atrophied testicles from a Malay, aged 25, who died of epilepsy, from which disease he has suffered for about four years. He had an almost uncontrollable tendency to masturbation. Each testis has a well-formed and healthy-looking tunica vaginalis; the tunica albuginea is thickened, and sends broad dissepiments into the secreting structure. Between these tunics, springing from the globus major of the epididymis, there are two small cysts in the left testicle, and one in the right. They contain

a milky opalescent fluid of mawkish odour, exhibiting, under the microscope, a large amount of fatty granules and molecules, degenerated and withered epithelial cells, and a few filamentous particles,—probably disintegrating spermatozoa.

The testis-structure is well formed, but in parts the semeniferous tubules appear to be compressed, and to have lost their epithelial lining, from the abnormal growth of the connective tissue originating and extending from the fibrous septa of the tunica albuginea. This tissue is abundantly nucleated, and here and there irregularly pigmented. The tubular epithelium is also abnormally fatty.

48. Chronic orchitis (? syphilitic). No history. The testicle is enlarged and very firm. On section for the most part smooth, but here and there exhibiting small circumscribed granules of soft, yellowish, cheesy matter.

On microscopical examination, the chief change consists of an abnormal hypertrophy of the intertubular connective tissue, which is associated, in parts, with a scanty nuclear growth. The tubules are either compressed or but little altered, and their contents, similarly, are either healthy or undergoing cheesy transformation. The small, disseminated, opaque granules above described appear to consist of such transformed tubular contents.

49. Old hydrocele of the tunica vaginalis testis, with much thickening of the sac, and recent inflammatory deposit upon its inner surface. The tunica albuginea is also hypertrophied; the testicle compressed and atrophied.

50. "Double hydrocele. The penis is *in situ*, but the skin and dartos have been removed, and on the right side the tunica vaginalis propria is exposed. The pyramidal shape of the hydrocele on the left side is well shown." (Ewart.)

51. Double hydrocele. The tunicae vaginales are much thickened and hardened, and the internal surfaces of each are rendered opaque and irregular from long-standing chronic inflammation. (Ewart.) *Presented by* Mr. Vanderstratten.

52. The sac of an enormous hydrocele, from which "182 ounces of fluid were removed." The tunica vaginalis is greatly thickened, and its lining membrane rough, with adhering shreds of lymph. The patient, an old man, died from diarrhoea contracted in hospital." *Presented by* Professor S. B. Partridge.

53. "Tunica vaginalis of a hydrocele laid open. It is much thickened and hypertrophied, and its internal surface much roughened and irregular from lymph deposit. A strong band is seen stretching across from the tunica vaginalis propria to the tunica vaginalis reflexa. The testis occupies the upper and back part of the hydrocele." (Ewart.)

54. Hydroceles of the tunicae vaginales. The left is larger, and somewhat hour-glass shaped; it contained about half a pint of serous fluid. The right, smaller, is characteristically pear-shaped, and contained about three ounces of similar fluid. (Both are now stuffed with cotton-wool to natural size.)—From a native male, aged 20, who died in hospital of chronic dysentery.

55. An old hydrocele, removed *post mortem*, from a native male, aged 50. The tunica vaginalis is greatly thickened—in parts measuring a third of an inch, and also partially calcified. It contained about a pint and a half of turbid serum. The testicle, very much compressed and atrophied, may be observed at one side of the sac.
56. Hydrocele of the right tunica vaginalis, obtained on *post mortem* examination of a native male, aged 32, who died of pneumonia. It is about the size of the foetal head, is typically pyriform in shape, and filled with clear, amber-coloured, serous fluid.
57. A hydrocele of the right tunica vaginalis, of characteristic shape, and of the size of one's fist.—From a native, aged 45, who died of cholera.
58. A similar but larger specimen of hydrocele of the left tunica vaginalis.—From a native, aged 50, who died of acute dysentery.
59. Two hydroceles (right and left), obtained *post mortem*, from a native male, aged 45, who died of apoplexy. The left is the larger, and weighs $34\frac{3}{4}$ ounces; it is preserved entire. The right is smaller, and has been stuffed with tow.
60. An interesting variety of congenital hydrocele, consisting of a sac, which extended probably from the abdomen (peritoneum) along the cord to the testicle. It measures fully eight inches in length, and is constricted just above the testicle, so as to present a somewhat hour-glass shape. The abdominal or upper end is now closed, but below, it is continuous with, in fact forms the tunica vaginalis testis. This lower portion of the sac is a good deal thickened. The testicle is healthy; its proper structure may be viewed from the section made on the posterior aspect of the preparation.
61. A preparation showing the result of operation, by tapping and injection, upon a hydrocele of the right tunica vaginalis, after an interval of about six weeks. The parietal and visceral layers of the serous membrane are united or glued together by a considerable quantity of soft, gelatinous-looking, finely-fibrillated material—evidently organising inflammatory exudation or lymph. The testicle is healthy. From a European, aged 40, who died in hospital of apoplexy.
62. Radical cure of hydrocele. The right testicle and coverings of a Mahomedan, aged 35, illustrating the mode of obliteration of the sac of the tunica vaginalis after operation for a small hydrocele. A large quantity of yellowish organising lymph fills the interspace between the parietal and visceral layers of the membrane, and is undergoing consolidation and fibrillation. The testicle is a little compressed and atrophied.
63. "Hæmatocele of the right tunica vaginalis, with great thickening of the sac, which was filled with coagulated blood. The sac is now turned inside out, and is seen covered with a finely granular lamina of coagulable lymph." (Ewart.) *Presented by* Professor Bedford.
64. "Great enlargement, thickening, and induration of the left tunica vaginalis, which is seen filled with a coagulum of blood.

The right tunica vaginalis is also much thickened and filled with a blood coagulum. Both sacs on being opened contained also a small quantity of sanguineous fluid. Both testes are partially disorganized." (Ewart.) No history.

65. "Hæmatocele. The tunica vaginalis was found distended with coagulated blood. The sac is thickened, and much roughened on its internal surface by fibrinous deposition. A section of the testicle shows that the tunica albuginea is thickened, but that the parenchyma of the organ is healthy." (Ewart.) *Presented by* Dr. Esdaile.
66. A hæmatocoele of the left tunica vaginalis. The latter is much thickened, and contains a blood-coagulum the size of an orange. At the lower part of the preparation the testicle is seen compressed, and invested by a greatly indurated tunica albuginea. From an Abyssinian, aged 35.
67. "Suppuration of the tunica vaginalis, the whole of which (here preserved) came away through a wound formed by sloughing of the serotum." (Colles.)

Portions examined microscopically show that, on the inner surface of the membrane, the epithelium is in a state of rapid proliferation, and covered with exudation material, *i.e.*, small, round, granular cells, with minute blood vessels, and amorphous matter. *Presented by* Professor J. Fayrer.

68. A portion of an "elephantoid" serotum exhibiting acute suppuration of the right tunica vaginalis. At the operation nearly a pint of pus with several large blood clots were evacuated from the sac, the inner surface of which presents a highly thickened and inflamed condition, and is covered by soft, vascular, shreddy material—lymph.
69. Calcification of the tunica vaginalis, which forms a rigid-walled cyst, the size of a walnut. The testicle appears to be healthy.
70. "An enormously thickened tunica vaginalis, containing a deposit of calcareous material, and having its interior lined by ragged coagulable lymph." (Ewart.)
71. "The large sac of a hydrocele, having white chalky deposits in its walls. It contained a dark red material, furnishing innumerable plates of cholesterine, small fat globules, yellow granular matter (hæmatosine), and a small number of granular cells of different sizes." (Ewart.) *Presented by* Babu Nil Madub Mookerjee.
72. "Extensive calcareous degeneration of the tunica vaginalis from a case of elephantiasis seroti. The mineral material exists in plates, which are so numerous as to give the sac the appearance of a shell slightly intermixed with organic or fibrous texture." (Ewart.)
73. "Calcareous degeneration of the tunica vaginalis. The inside of the sacs is roughened and rendered more or less villous from the deposition of lymph." (Ewart.)
74. A portion of the left tunica vaginalis of a native patient, aged 60, who was operated upon for a large scrotal tumour (elephantiasis seroti).

Flattened calcareous plates and irregular-shaped concretions are extensively distributed in the very greatly thickened and fibroid tissue of this membrane. The testicle was much atrophied. (*See prep. No. 44.*)

75. The testicle and its coverings from a case of serotal elephantiasis, --removed by operation. The tunica vaginalis is enormously thickened, in parts fully a quarter of an inch in diameter. It is studded, here and there, irregularly, with large calcareous plates. The tunica albuginea also shows much fibroid thickening. The testicle is compressed and atrophied. *Presented by Professor S. B. Partridge.*

76. Left testicle of a native patient, a Mahomedan, aged 35. The man was admitted with an inflamed scrotum, the skin over the left testicle being especially tense, shiny, dusky-red, and painful. An incision was made into this part, and a small slough of the cellular tissue evacuated thereby. Two days after, the testicle was found protruding through the wound, as a large fungating mass. The glands in the left groin were slightly enlarged. The testicular tumour was not at all painful, but the patient looked very cachectic, and it was thought advisable to remove the organ entirely. The other (right) testicle was also a good deal enlarged, and felt indurated. There was no history of syphilis.

The testicle preserved is rather larger than a duck's egg. Its surface is slightly lobulated. On section smooth, but showing, amidst a pinkish basis-substance, a very large number of minute, round, opaque dots or granules,—the obstructed and dilated cross-sections of the semeniferous tubules.

These are seen still more distinctly in fine sections prepared for the microscope. Great proliferation of the intratubular epithelium is found, with marked obstruction and irregular dilatation of the seminal tubules. The shred epithelium is highly granular and fatty, and, in parts, has quite broken down into an amorphous debris. The general parenchyma of the testis (the intertubular tissue) is the seat of an extensive nuclear and small-celled growth. The cells are lymphoid-looking,—with single or double nuclei, slightly granular, and round. Blood vessels are somewhat deficient, and small in calibre.

The consistency of the testis is throughout very soft. It is somewhat dumb-bell shaped, the growth appearing to affect the upper end (epididymis) and lower portion, both of which form globular expansions, while the intermediate segment is less involved. The structure of the new growth and the morbid changes in the testicle are at once characteristic of scrofulous orchitis. *Presented by Professor Gayer.*

77. A fibroid tumour of the left testis. Removed from a native aged 45. The growth was of seven years' duration. The glands in the groin were enlarged. No history of syphilis.

This is a tumour about the size of two fists, covered by greatly thickened "elephantoid" skin and dartos. It is of oval shape, and slightly lobulated. The central portion of the growth is hollowed out into a deep crater-like cavity, with irregular and

ragged, suppurating walls. Large portions of the tumour-tissue were discharged from this part during life. The cut surface of the growth has a dull, opaque-white colour, and fibrous appearance. Portions of the proper testis-structure can still be seen, but compressed and surrounded by broad white bands of fibrous tissue, and therefore more or less atrophied or broken down into small pseudo-cysts. The consistency and structure generally are very firm and dense.

On microscopical examination, the true testis-structure is found much atrophied; the tubuli semeniferi compressed and obliterated, and the surrounding or supporting connective tissue densely crowded with small round cells, with a scanty fibrillating intercellular substance. In parts more removed from the testis, and forming the greater bulk of the tumour, the structure is more truly fibroid, consisting of dense broad bands of white fibrous tissue interlacing closely with each other, or forming slit-like parallel meshes, which are occupied by lymphoid corpuscles (mono-nucleated, slightly granular cells). The sections of a good many small arteries come into view. The growth is essentially fibro-cellular; shows in the main no tendency to the formation of cheesy nodules or softenings, and involves the testicular structure only partially. The greater bulk seems to be a development from the tunica albuginea and other non-glandular portions of the testis. It appears, therefore, to be a fibroma, which has probably accidentally inflamed, and in part has thus softened, suppurated, and been discharged.

Presented by Professor Gayer.

78. A. "fungus-testis" (right). Removed from an East Indian, aged 31. "It is said to have originated from a blow on the testicle received seven months ago, followed by enlargement, inflammation, and ulceration. There is no history of syphilis or gonorrhœa."

The skin over the testicle is seen to have ulcerated, and, through the opening thus formed—(rather larger than a rupee)—about one-fourth of the organ protrudes. On section, the whole testicle is firm, thickened, fibrous in appearance, and of a yellowish-white colour.

Sections examined microscopically, reveal a very abundant small-celled or nuclear infiltration of the intertubular tissue. The cells are round or oval, and in parts, are observed developing into a spindle-celled fibrillated tissue. The semeniferous tubules are widely separated, and, at the same time, compressed by this new growth, but their lining epithelium is not shred,—only granular-looking and atrophic. No empty tubules. No caseous or lymphoid deposits.

The morbid appearances most closely resemble the results of syphilitic infection, *i.e.*, gummatous growth or syphilitic orchitis.
Presented by Dr. E. Lawrie.

79. Right testicle of a European, John A—, aged 26, removed on suspicion of being a malignant tumour. It is said to have been of four months' duration.

The whole testicle is enlarged, so as to form a pyriform tumour, the size of one's fist. On incision, in the fresh state, the cut surface presented a somewhat glistening, pale-bluish colour, with here and there patches more opaque and whitish in appear-

ance. The testis-structure has undergone complete transformation. It is firm but elastic, and somewhat juicy.

On microscopic examination, the seminal tubules are found distended, dilated, and ruptured; the secreting cells (epithelium) in a state of rapid proliferation. The intertubular connective tissue is hyperplastic,—crowded with nuclei and small round cells. These conditions are maintained pretty uniformly, with also, some fatty and molecular disintegration of the cell-elements, both tubular and intertubular.

The appearances closely resemble the structure of a rapidly developing guminatous growth, not tending to form circumscribed nodules, but occurring more as an infiltration, and probably, therefore, the morbid changes are to be referred to syphilitic infection.

80. Carcinoma testis. The whole of the testicle and the tunica albuginea are involved, and small secondary nodules are also seen developing in the course of the spermatic cord. The growth in the testicle is nodulated, and forms an irregularly pyriform mass, the size of a small orange.

On microscopical examination, there is found marked thickening of the intertubular connective tissue, which is also split up into narrow slits or interspaces, filled with round nucleated cells, rather larger than leucocytes. They exhibit but slight heteromorphism. This is the structure also of the smaller nodules in the substance of the cord. The semeniferous tubules are either dilated and ruptured, or have entirely disappeared. The intratubular contents are highly granular and fatty.

81. Enkephaloid carcinoma of the testicle. The preparation exhibits the right testis, presenting an enlarged, swollen, and softened condition, and which protruded in fungating form through an ulcerated opening in the scrotum. The superficial portion of the organ is greatly disorganised, partially sloughy, and pus-infiltrated; the deeper portions show the following changes on microscopical examination.

Proper (secreting) structure extensively destroyed. The tubules that exist are compressed, have lost their epithelial lining, and many are quite closed. The connective tissue around them is in a most actively proliferating condition, and presents, in parts, an epithelial transformation of the newly-formed cells. Such cells are large, round or oval, nucleated, highly fatty, and heteromorphic.

The left testicle was healthy. The lumbar glands, the lungs, and liver, were secondarily infected, *i.e.*, infiltrated with small nodules of soft cancer. The subject was a European, aged 43. He referred the disease to injury,—a contusion of the testicle in a railway collision, 18 months prior to his admission into this hospital. (*See further, "Surgical Post-mortem Records,"* vol. I, 1875, pp. 237-38.)

82. Both testicles of a native aged 45, removed on account of malignant disease. The right testicle is much enlarged, has a pyriform shape, and is about the size of two fists. The left is smaller. Both are diseased. The consistency (especially of the right) is very soft and succulent, and both organs are highly vascular.

The bulk of the morbid growth and enlargement affects, in each testis, chiefly the epididymis.

Examined microscopically, sections show an atrophic condition of the semeniferous tubules. Their lining epithelium has almost completely disappeared, and their channels are occupied by granular, amorphous, fatty material. Around the tubules, and composing the bulk of the enveloping new growth, is a densely cellular structure,—the cells about three times the size of blood-corpuscles, nucleated, and of a very regular, rounded or oval shape. No diversity in size or shape of these elements can be distinguished, and there are only here and there traces of an intercellular fibrous or fibrillated tissue. The latter exhibits no disposition into a true stroma. Blood vessels are very numerous and large, especially in the right testis, the sections from which, moreover, show extensive, dark, granular pigmentation. The inguinal glands on the left, and the lumbar and inguinal glands on the right side, were similarly infiltrated;—all enlarged, swollen, very soft and pulpy.

Upon the whole, therefore, the morbid growth more closely resembles sarcomatous than cancerous structure, and may be regarded as a *small round-celled sarcoma of both testicles*. (“Surgical *Post-mortem* Records,” vol. I, 1877, pp. 393-94.) *Presented by Professor Gayer.*

SERIES XIV.

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ORGANS OF GENERATION.

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1. A bicornuate uterus. It consists of a vertieal portion, an inch in length, formed chiefly by the cervix. From this, passing obliquely upwards and outwards, on either side, is a kind of double uterine body—pyriform cornua. These are rounded and expanded at their distal extremities, narrow where they join the common cervical canal. Each is a little over an inch in length. The ovaries are small; on section pale and anæmie, but dotted with a few dark pigmentary deposits.—From a native girl, aged 14, who died in hospital of gastro-enteritis, &c. (“Medical *Post-mortem* Records,” vol. III, 1879, pp. 7-8.)
2. Double uterus and vagina.—From a native female, aged 18, who committed suicide by hanging. The vaginæ are distinct and separate. The left is a little larger than the right;—the latter has been somewhat torn on removal *post mortem*. There is a thick fibrous septum between these canals, continued upwards also between the cervical portions of the twin uteri, but, at about the point where each cervix terminates in the body of the corresponding uterus, the separation between these organs becomes more complete, so that the rounded fundus of each uterus is quite free. The left is a little the larger organ. There are two ovaries with corresponding Fallopian tubes and round ligaments; these structures being eonnected with the outer border of the right and left uterus. On incising the ovaries, several well-formed Graafian vesicles are found; two or three contained small dark blood coagula. “Judging from the skin of the abdomen and breasts, the woman had never had a child,” but had probably menstruated regularly.
Presented by Dr. Gordon Price, Civil Surgeon, Jessore.
3. A preparation illustrating marked antelexion of the uterus, the body of which is enlarged. The ovaries exhibit simple cystic degeneration. No history. *Presented by* Mr. Cullen.
4. Chronic and persistent inversion of the uterus, “constituting a tumour almost as large as the foetal head, which is lying external to the labia majora. The investing membrane of the tumour—the lining membrane of the uterus—is dense, opaque, and unyielding.” (Ewart.) *Presented by* Babu Dwarkanath Bose.
5. Uterus showing at its fundus a punctured wound, an inch in length, evidently produced by some sharp-pointed instrument.

"Half the body of a foetus of about the third month is exhibited, protruding from the womb into the abdominal cavity." The uterine tumour is about the size of one's fist. No history.

6. A specimen showing perforation of the fundus of the uterus by a piece of vegetable substance—a rootlet, said to be that of the "*seth kuroopee*" (*Nerium odorum*), introduced for the purpose of producing abortion. The rootlet is about as thick as a knitting-needle; has been passed through the os uteri up to the fundus, and has pierced the latter about a third of an inch on the inner side of the right Fallopian tube,—nearer the anterior than the posterior surface of the uterus.

"Pelvic cellulitis and circumscribed peritonitis, with matting of several coils of the small intestine and of the sigmoid flexure, and suppuration within the pelvis was the result. Death resulted—judging from *post mortem* signs—in about seven days." *Presented by Dr. J. O'Brien, Civil Surgeon, Burdwan.*

7. "Uterus and contents at the full term of gestation. The head is seen to have been passing the os when the spontaneous rupture of the womb anteriorly, and at the junction of the cervix with the body of the organ, took place; the rent is sufficiently large to admit the fist, and has given exit to the left arm of the foetus and a portion of the umbilical cord." (Ewart.) *Presented by Dr. Palmer.*

8. Spontaneous rupture of the uterus during labour. The preparation shows a large transverse rent in the anterior wall of the uterus, about an inch above the os. Through this a mature foetus was completely expelled into the abdominal cavity. The placenta was also detached, and found just within the edges of the rent, gently grasped by the same. A large amount of blood (over 30 ounces), partly fluid, partly coagulated, was found in the peritoneal cavity. The foetal head was directed downwards, and occupied the whole of the left lumbar and hypochondriac regions,—the colon, and coils of the small intestine being pushed to the right. The circumference of the contracted uterus,—at the level of the attachment of the ovaries,—measures 12 inches. The circumference of the foetal head was $13\frac{1}{2}$ inches.

The subject was a native female, aged 25, brought to the hospital moribund, and who died within ten minutes of admission.

9. A dry preparation of the pelvis in the above case. The bones are slender and ill-developed. The promontory of the sacrum projects forwards unusually, and narrows the inlet considerably, while the outlet is similarly constricted by an abnormal approximation of the spines of the ischia and point of the coccyx. The following measurements were recorded on removal of the soft parts:—

Inlet of pelvis, (a) conjugate or antero-posterior diameter—3 inches; (b) transverse diameter—4 inches; (c) oblique diameter—4 inches.

Outlet of pelvis, (a) conjugate diameter— $2\frac{1}{2}$ inches; (b) transverse diameter— $3\frac{1}{2}$ inches. (A portion of the coccyx has unfortunately been lost.)

10. Uterus of a native female, showing the results of internal or vaginal hysterotomy performed during labour. "The patient had been in labor for 36 hours. The head presented, and was well down, but the os uteri was obliterated, and showed no signs of being opened up. The operation was performed at 1-30 P.M. (21st March 1865). Death took place at 11 P.M. the same day. The interior of the cervix is seen to be continuous with that of the uterus, and to present the same shaggy aspect. The incisions made into it do not extend to the peritoneum at any part." (Colles.) *Presented by* Professor T. E. Charles.
11. The greater portion of a conical cervix uteri removed by amputation. The operation was rendered necessary on account of the "exceedingly irritable and hyperæsthetic condition of this prolapsed portion of the organ. The results were highly satisfactory." *Presented by* Dr. J. Ewart.
12. Uterus illustrating the section made in the Cæsarean operation performed by Dr. Webb in order to save the life of a child after the death of the mother from fracture of the base of the skull, with laceration of (and extravasation of blood into) the brain. "Some said the patient had been dead half an hour, others an hour, others an hour and a half." Dr. Webb's account of the operation and its results is as follows:—

"A longitudinal incision through the integuments of the abdomen in the course of the *linea alba* exposed the womb, which was apparently warmer than natural. It was opened in the same manner at its upper anterior aspect, where it had nothing intervening between it and the abdominal parieties; but the placenta was attached over the spot which had been cut open, and it bled freely. By passing the hand quickly lower down between this and the uterine walls, the membranes were distinguished ruptured, and the child readily delivered. The infant was still quite warm, not quite full grown, and of a good colour. Attempts were made to establish respiration by inflating the lungs through a tube, but these were ineffectual. The child became cold, more and more livid. I desisted, and returned to lay it by the mother, when I was surprised to observe that the womb, from having filled all the abdomen, had so contracted as to have spontaneously extruded part of the placenta."

The contracted uterus, with the extruded placenta, and the incision made by the operation, are all readily recognisable in the preparation. (Webb's *Pathologia Indica*, No. 835, p. 308.)

13. Hypertrophy with chronic induration and elongation of the posterior lip of the os uteri, from which, during life, "a polypus had been removed." The structure of the lip is very firm and compact. The normal fibro-muscular tissue is found, under the microscope, greatly increased, the mucous glands enlarged and dilated, the blood vessels of abnormal size or calibre, and everywhere a free nuclear proliferation developing into connective tissue.
14. Excessive hypertrophy of the anterior lip of the os uteri. (The organ has been opened from behind.) It forms an outgrowth the size of a duck's egg, which completely filled the anterior cul-de-sac of the vagina. The external surface is a little rough and excoriated. In the recent state was highly vascular and of

a purplish colour. The section made through it shows that its structure is homologous, and directly continuous with that of the cervix. The canal of the latter is dilated and elongated. The uterus is small, its cavity empty; the walls are a good deal thinned at the level of the ostium internum.—From a native woman, aged about 40, who died in hospital of pneumonia. (*See further, "Medical Post-mortem Records,"* vol. I, 1873, pp. 247-48.)

15. Endometritis after delivery. The uterus is enlarged to about three times its normal size, and its walls proportionately thickened. The lining membrane presents a shreddy and sloughy appearance, and is much softened and swollen.
16. "An inflamed uterus. The muscular substance is softened, and the mucous membrane coated with a fine lamina of flocculent lymph." (Ewart.) No history.
Presented by Babu Chunder Coomar Dey.
17. "Uterus and appendages of a Hindoo primipara, who died about the end of the first month of pregnancy. The walls of the organ are slightly enlarged, and its internal surface is softened and villous from inflammatory changes following the expulsion of the ovum." (Ewart.)
18. Uterus showing chronic inflammatory thickening, roughening, and villosity of the lining membrane, with some enlargement of its cavity, and thickening of its walls,—the results of "dysmenorrhœal inflammation" (chronic endometritis).
Presented by Professor Allan Webb.
19. "Uterus and vagina, the internal surfaces of which are greatly inflamed by the means employed to produce criminal abortion." (Ewart.) No history.
Presented by Babu Nil Madub Mookerjee.
20. "Sloughing of the vagina and neck of the uterus, the body of which is much softened, inflamed, presenting on its internal surface a ragged and villous appearance." (Allan Webb.) This condition followed instrumental delivery at the full term of gestation. (*Pathologia Indica*, No. 850, p. 288.)
21. The uterus and right ovary of a native female, aged 55, who died from Morbus Brightii. The uterus is as large as one's fist. The cervix is slightly elongated, and its canal obliterated from the os externum to the os internum. A probe can be passed through the former, but will not penetrate the latter. The uterine cavity is seen to be filled by a soft, pulpy, grumous, pultaceous mass, which, under the microscope, consists of large granular cells, altered blood-corpuscles, and much fat,—no muscular or fibrous tissue. It is probably, therefore, a large broken down or disintegrating blood-clot. The lining membrane of the uterus is entire, and constitutes a cyst-like investment for this material. The uterine walls are much thinned and atrophied.
The right ovary is the size of a pigeon's egg, very hard, and firm; on section shows considerable fibroid thickening, with fatty and, in parts, calcareous degeneration.

The changes in the uterus are probably the result of endometritis, *i.e.*, obliteration of the cervical canal and extravasation of blood into the uterine cavity, around which this organ has enlarged. The condition is a rare one at such an advanced period of life.

22. Extensive laceration and sloughing of the upper part of the vagina and cervix uteri, in a case of death after parturition. The uterus is large, its walls are much thickened, and the whole organ is imperfectly contracted. The lining membrane is soft, swollen, and shreddy. No history.

23. "Sloughing and sphacelus of a part of the body, and the cervix uteri and upper part of the vagina, from a woman at the full term of utero-gestation." (Ewart.)

24. "Uterus inflamed, and covered externally with layers of lymph. The *lal chittra* stick now in the cavity of the organ had been employed to produce criminal abortion. The consequent inflammation of the substance of the uterus and of the peritoneum was the immediate cause of death." (Ewart.)

Presented by Baboo Dwarka Nath Bhose.

25. Uterus and ovaries of a native woman who died in hospital of tetanus, and who had probably aborted a short time previously. The os uteri was found open; the lips thickened, bulbous, and highly vascular. The interior of the uterus presented a dark purplish colour; and, at the fundus, may be seen a small, raised, sloughy patch, with considerable villous thickening of the mucous membrane—probably the attachment of the foetal placenta. The left ovary exhibits a very fine specimen of true corpus luteum of about the third month.

Presented by Professor Chuckerbutty.

26. The uterus and ovaries of a native female, aged 24, who died from tetanus. The left ovary contains a true corpus luteum. The uterus presents all the appearances of having been recently occupied by an ovum. It is enlarged; its walls are thick and soft; the lining membrane swollen and highly vascular,—towards the fundus, shreddy-looking with portions of detached decidua. The cause of the tetanus was probably abortion, produced criminally or otherwise.

27. The vagina, uterus, and ovaries, from a case of tetanus, following apparently abortion, although no history of the same could be obtained from the patient,—a native female, aged 36. The vagina is wide; it is superficially abraded in both culs-de-sac around the os uteri. The latter readily admitted the finger, and its margins are slightly fissured. The uterus is about the size of a cricket-ball. Its walls are thickened and vascular. The lining membrane soft, swollen, and highly injected;—at one portion of the anterior wall of the fundus, over a limited space, presents a raised, ragged, and villous appearance, as if indicating the site of a small detached placenta. Both ovaries are swollen and vascular; the left contains a true corpus luteum.

(See further, "Medical *Post-mortem* Records," vol. I, 1875, pp. 727-28.)

28. Uterus showing a large V-shaped laceration of its posterior wall, with great vascularity, softening, and sloughing of the lining membrane, and intense inflammatory disorganisation of the uterine appendages. Obtained on *post mortem* examination of the body of a native female, a widow, aged 35, who died an hour after admission into the hospital. She is stated to have aborted in the third month of pregnancy. The injury to the uterus must have been produced mechanically, *i.e.*, by means of some sharp-pointed instrument. There was a large extravasation of blood and serum (30 ounces) into the peritoneal cavity, and general acute peritonitis. ("Obstetric Records," vol. I, 1875, pp. 235-36.)
29. Uterus and ovaries, from a native female, aged 30, a prostitute, who died from tetanus. The uterus shows evidence of recent impregnation and abortion. Its walls are thick, soft, and vascular; the lining membrane the same, and, at the fundus (posterior wall), over a space about the size of a rupee, there is a prominent, villous-looking patch, indicating probably the situation of the detached placenta. In the right ovary a large true corpus luteum may be observed, the size of an unshelled almond, and with a well-defined, yellow, erenated margin, quite three lines in diameter. (See further, "Medical Post-mortem Records," vol. I, 1876, pp. 987-88.)
30. The uterus and ovaries of a native female, aged 28, admitted into hospital with symptoms of tetanus, and who died within six hours.

The uterus is the size of a large orange; its walls are thick and highly vascular. The lining membrane is soft, dark-purplish in colour (in the fresh state), and superficially sloughy towards the fundus, where also, it is raised in a fungus-like form over a limited space, rather larger than a rupee (florin),—evidently marking the site of a small detached placenta. In the right ovary there is a large, well-defined corpus luteum, with a deep orange-yellow coloured, erenated, and pigmented margin.

These conditions render it impossible to doubt that abortion had recently taken place, either naturally or induced by artificial means, and that the tetanus was really traumatic.

Floating freely, but moored by a delicate thread of connective tissue to the fimbriated extremity of the right Fallopian tube, is a simple serous cyst about the size, shape, and colour of an ordinary white grape.

31. The uterus and ovaries of a Bengali female, aged 28, a maid-servant, who died from tetanus, probably the result of abortion criminally induced. The posterior lip of the os uteri is torn and partially perforated, as if by some sharp instrument. The uterus is enlarged; its lining membrane exceedingly vascular, soft, and swollen. Near the fundus—posterior wall—there is a ragged thickened patch,—the remains of a small detached placenta. In the left ovary a corpus luteum of pregnancy is seen, oval in shape, about the size of a two-

- anna (three-penny) piece, and with a crenated yellowish margin. ("Obstetric *Post-mortem* Records," vol. I, 1879, pp. 601-602.)
32. Uterus from a case of tetanus following abortion,—a native female, aged 30. There are several small lacerations in the situation of the os internum, one of which, on the left side, is very deep, and, in fact, stops very little short of actual perforation. It looks as if produced by a sharp-pointed piece of the *lal chittra* (*Plumbago rosea*), so commonly employed for this purpose (abortion). The uterus is enlarged; its walls thickened; the lining membrane soft, superficially sloughy, and, at the fundus, exhibits a tufted appearance,—the site of the detached placenta. Both ovaries are enlarged, and were found highly vascular; in the right is a true corpus luteum of pregnancy, the size of a two-anna (three-penny) piece. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 339-40.)
33. A divided blood-clot, of pyriform shape, expelled spontaneously from the cavity of the uterus,—(probably dysmenorrhœal). Its inner surface is smooth, its external reticulated and velvety in appearance. It seems to have formed a complete mould of the interior of the uterus.
34. A firm coagulum taking the shape or mould of the cavity of the uterus, and expelled, in the act of straining at stool, in case of dysmenorrhœa.
35. "A fibrous tumour" (myoma) "springing, by a broad base, from the internal surface of the fundus uteri, and filling the enlarged cavity of the organ to within the quarter of an inch from the os internum. It is as large as a hen's egg." (Ewart.) There is a simple, unilocular cyst of the left ovary, a little larger in size than the uterine tumour. *Presented by* Dr. Herbert Baillie.
36. A huge myoma, completely filling the uterine cavity, and intimately connected with the walls of the uterus, except just above the situation of the ostium internum. It is oval in shape, accurately moulded to the interior of the uterus, and measures 7 inches in length, 4 inches in breadth (at the widest part), and from 3 to 4 inches in thickness. The uterine parietes at the cervical canal, where still free, are seen to be a good deal thinned; the rest of the organ has expanded to a commensurate degree with the growth of the tumour, and, together with the latter, forms an ovoid mass as large as the adult head.
37. Preparation showing (1) a polypoid myoma filling the cavity of an enlarged uterus. It is attached by a broad base or pedicle to the posterior wall of the fundus, and receives an investment from the lining membrane, which forms a distinct capsule to the growth. The latter displays, on section, a concentrically arranged, fibroid-looking structure. The walls of the uterus are nearly half an inch in thickness. (2) On the right side,—developing apparently between the layers of the broad ligament—is a multilocular cyst, the size of a small orange. The right ovary and Fallopian tube are inseparably connected to the upper part of this cyst. The ovary appears to be atrophied. *Presented by* Assistant Surgeon Tameez Khan.

38. An interstitial myoma, developing in, and occupying the whole of the posterior wall of the uterus. It is the size of a large orange, and forms an irregularly rounded projection at the back of the uterus. The structure is very firm owing to partial calcification. The uterus is small and flattened, apparently from the pressure of the growth. A glass rod has been passed into its cavity through the os.
Presented by Professor Mouat.
39. A fibroid tumour (myo-fibroma) of the uterus, as large as a melon. The growth has developed from the whole of the external surface of the body of the organ. The outline of the latter, imbedded in the mass, and presenting a narrowed and elongated character, with an anteflexed condition of the cervix, is indicated by glass rods.
Presented by Baboo Nil Madub Mookerjee.
40. "Uterus and appendages showing a polypus" (myoma) "of pyramidal shape, hanging by a narrow pedicle from the mouth of the womb into the vagina." (Ewart.)
41. Preparation showing the uterus and vagina with a polypoid myoma, the size of a small orange, projecting through the os, and completely filling the vagina. (A portion of the anterior wall of the latter has been removed in order to display the growth more satisfactorily.) The pedicle of the tumour is long and narrow, and attached to the posterior wall of the fundus uteri. *Presented by Baboo Dwarka Nath Bhose.*
42. An intramural fibroid tumour (myoma) of the uterus, the size of a cricket-ball, developing from the upper part of the fundus, and producing much distortion of the organ in this situation. The cavity of the uterus is enlarged, and its walls below the growth are abnormally thickened and rigid.—From a native female, aged 55.
43. Two small fibroid tumours of the uterus; one, an interstitial development in the anterior wall of the organ, just beyond the ostium internum, the other springing from the superficial aspect of the right wall of the cervix. Both growths have distinct capsules, and each is composed of dense, concentrically arranged, white fibrous tissue, with a very small amount of smooth muscular fibre.—From a native female, aged 35.
44. A myoma, the size of a nutmeg, growing from the external or free surface of the fundus uteri. It is firm, has a short thick pedicle, and is encapsuled by peritoneum continuous with that investing the body of the uterus. The fibro-muscular structure has a somewhat concentric arrangement, as seen on section of the little tumour.—Taken from a native woman who committed suicide by hanging.
Presented by Assistant Surgeon Gopal Chunder Roy, Howrah.
45. A similar specimen. The uterus and ovaries of a native woman, aged 35, who died from dysentery. There is a myoma, the size of a nutmeg, and with a short thick pedicle, growing from the fundus into the peritoneal cavity. It receives a capsular investment from the serous membrane, continuous with that covering

the rest of the organ. The right ovary is in a state of cystic degeneration.

46. A large uterine polypus, which was spontaneously separated and expelled. It was found occupying the outlet of the vagina, and readily removed. Apparently the pedicle had divided by sloughing. From a native female, aged 40. The growth was probably of about two years' duration, during which period the patient had suffered from repeated attacks of uterine hæmorrhage.

The polypus is about the size of the foetal head; ovoid in shape. At the narrow end the ragged and sloughy remains of the pedicle may be seen. The tumour is firm but elastic in consistency; has a well-defined, fibrous capsule; a pale pinkish-white colour, and fibroid appearance on section. Examined microscopically, presents all the characters of a true myoma.

Presented by Baboo Khetur Nath Mittra, L.M.S.

47. A tumour, the size of a walnut, and having a perfectly smooth surface, removed by the écraseur from the uterus of a native woman, aged 52, who had been suffering for six months from recurrent metrorrhagia.

The little growth is firm and fibrous-looking on section, but displays several circumscribed softenings and small sanguineous cysts; the former consisting of creamy, broken-down tumour tissue, the latter of softly coagulated blood.

On microscopical examination, the structure is found to be fibro-cellular, —the cell elements predominating; with also, a scanty development of smooth muscular tissue. The blood vessels are large and numerous, their walls very thin and delicate. The tumour is, therefore, an actively growing fibroma (of the cellular type), but including in its structure a certain amount of smooth muscular tissue, *i.e.*, a fibro-myoma.

Presented by Professor T. E. Charles.

48. A large fibroid tumour filling the uterus, and removed by the écraseur. From a married East Indian female, aged about 25. No exact information could be obtained as to the duration or period of growth of the tumour. It is a flattened, broad-based growth, the pedicular attachment of which is indicated by an oval excavation on one side, three inches in length and two in breadth. The surface is moderately lobulated. On section it is very firm and dense, fibrous-looking, and laminated—a series of fibroid nodules closely united together, the fasciculi of each having a pretty regularly concentric arrangement. The sections of numerous large blood vessels are also brought into view on incising the tumour, showing its abundant vascularity. In size it is rather larger than the foetal head.

Examined microscopically, thin sections exhibit a fibro-myomatous structure. The (smooth) muscular development is considerable; the nuclei large, and many of them infiltrated with fat granules and globules. The muscular fasciculi are bound together—in concentrically arranged bundles—by firm well-formed connective tissue, having also numerous nuclei. The tumour is therefore a true fibro-myoma. *Presented by* Professor T. E. Charles.

49. The uterus of an aged East Indian female (æt. 80), who died from chronic diarrhoea, &c., showing a polypoid growth attached to the anterior wall of the fundus. It is about the size of a betel-nut, myomatous in structure, and throughout thickly infiltrated with small serous cysts, many of which are also found in the surrounding portion of the uterine wall.

50. "Large fibroid tumour of the uterus, which has undergone cretaceous degeneration. One ovary contains a fibrous tumour, the other has not been removed." (Colles.)

The tumour is roughly ovoid in shape,—the size of a turkey's egg. It involves chiefly the posterior and left lateral walls of the uterus, and is very dense and firm in consistency. An almost complete shell of calcareous matter forms a kind of capsule to the growth, and calcareous particles are also freely distributed throughout its substance. The uterus is greatly atrophied, and has been so much compressed by the tumour that its cavity is almost obliterated. *Presented by* Baboo Juggabandhu Bose.

51. Myoma of the uterus, the size of a nutmeg, developing interstitially in the anterior wall of the fundus. There is an indistinct line of a demarcation—no distinct capsule—separating it from the surrounding uterine tissue proper. It is seen to have produced marked ante-flexion of the organ.

On microscopical examination, the nucleated fibro-muscular tissue is very abundant, and forms more or less concentrically arranged bands, united together by a very small amount of connective tissue. The development of smooth muscular tissue is much greater in the tumour than in the adjacent substance of the uterus.—From a native female, aged 40, who died of cirrhosis of the liver and kidneys, &c.

52. Scirrhus of the uterus. The whole of the cervix has been destroyed, and the adjacent portion of the body of the uterus has an eroded and fissured appearance. The growth has extended to the upper part of the vagina, the posterior cul-de-sac of which has been nearly perforated. There is much thickening and rigidity of the broad ligaments, and of the peri-uterine tissues generally.

The structure, microscopically, is seen to consist of nucleated epithelial cells, not so large or polymorphous as in ordinary cancer of the womb (epithelioma); they are mostly rounded, oval, or angular, and contained in an alveolated stroma of connective tissue, which, though indistinct in parts, is in others remarkably well-developed and fibrous.

Presented by Professor D. B. Smith.

53. The uterus and ovaries of a native woman, aged about 40, who died in hospital. These parts are seen to be infiltrated with nodules of a pinkish-white soft material,—enkephaloid carcinoma. The whole of the cervix presents a ragged, disorganised condition,—the morbid growth appearing to have originated here, and to have infiltrated the surrounding structures secondarily. The ovaries and Fallopian tubes are matted together, and fixed to the sides of the uterus.

Under the microscope, both the delicate stroma and characteristic epithelial cell-elements of this variety of cancer are readily distinguishable. (*See further, "Medical Post-mortem Records,"* vol. I, 1873, p. 288.)

54. Enkephaloid cancer of the uterus. A preparation exhibiting the pelvic viscera and the kidneys of a native woman, aged 65. The morbid changes are as follow:—(a) A granular condition of the kidneys, with dilatation of their pelves and calyces at the expense of the secreting structure. Dilatation also of the ureters from obstruction of their vesical terminations by the morbid growth. (b) The urinary bladder, with a large sloughy perforation of its posterior wall,—the size of a five-shilling piece,—by means of which a direct communication was established with the vagina. (c) The vagina, with only about an inch of the anterior portion of its canal entire; the rest, together with almost the whole of the uterus, entirely destroyed, *i.e.*, has softened and sloughed away. (d) The rectum, with a large oval opening in its anterior wall, about four inches in length by two in breadth, situated about a finger's length above the anus, and communicating with the vagina and the disorganised remains of the uterus.

The bladder, vagina, and rectum all thus open into each other, owing to the destruction of the intervening tissues by the cancerous growth.

Under the microscope, sections taken from different portions of this mass show all the characters of true enkephaloid carcinoma.

55. The fundus uteri and appendages from a case of carcinoma,—a native female, aged 45. The anterior half of the uterus has been completely destroyed, and the substance of the fundus (remaining) is infiltrated, very soft and pulpy,—rapidly undergoing disintegration. The urinary bladder was laid open, and a free communication existed between it and the ragged cavity of the uterus and vagina. The ovaries and Fallopian tubes are matted together, and fixed to the sides of the uterus. Both the former showed cancerous infiltration, and the fimbriated extremity of the right Fallopian tube was expanded into an abscess, which contained about a teaspoonful of very offensive thick pus.

Sections taken from the softened and disorganising remains of the uterus and ovaries display, under the microscope, a typical enkephaloid structure; both stroma and cells are well marked. The former exhibits well-defined alveoli, which are crowded with highly granular, fatty, and rapidly proliferating heteromorphic epithelia. (*See further, "Obstetric Post-mortem Records,"* vol. I, 1880, pp. 717-18.)

56. Canceroid of the uterus. A preparation exhibiting the genito-urinary organs of an Eurasian female, aged 40. The ureters—particularly the left—are dilated. The urinary bladder is healthy. The mucous membrane of the upper part of the vagina is much ulcerated. A narrow ring represents the remains of the os uteri. It has a cicatricial appearance on its anterior aspect, but posteriorly has been almost completely

detached from the cervix, owing to extensive destruction of the latter;—two or three small soft nodules, in a ragged sloughy condition, are all the remains of this portion of the uterus. On attempting to remove the uterus (*post mortem*) much of its substance has been unavoidably torn. Such portions as are still recognisable, are found infiltrated and soft, and in parts nearly as thin as brown paper. The fundus uteri alone preserves its shape, but is also partially softened and ragged.

Both ovaries are small and atrophied, and firmly fixed by infiltrating material to the fundus uteri. Between the layers of the broad ligament, on the right side, there is a collection of pus, forming an abscess the size of a small orange, which extended upwards to just above the brim of the pelvis, and was adherent to the peritoneum lining the right iliac fossa. The rectum is healthy. Neither bladder nor rectum have been perforated, although the intervening sero-cellular tissue showed evidences of nodular infiltration and softening.

Examined microscopically, sections from the cervical and corporeal remains of the uterus exhibit a carcinomatous structure, consisting of alveoli of connective tissue filled with polymorphous nucleated cells of epithelial type. These cells are more uniform in size, and smaller than in true epithelioma. They resemble more closely the elements of encephaloid or scirrhus cancer. In parts, however, no differentiation into alveoli and cells can be distinguished, owing to a diffuse cellular infiltration of the fibro-muscular tissue of the uterus. These cells are highly infiltrated with fat, which is also abundantly distributed throughout the altered uterine parenchyma, and greatly obscures the proper fibro-muscular cells.

The characters of the morbid growth are evidently closely allied to, if not identical with encephaloid carcinoma.

(See further, "*Obstetric Post-mortem Records*," vol. I, 1877, pp. 353-54.)

57. Epithelioma of the uterus. The os is ragged, widely open, its edges ulcerated and shreddy. A morbid growth, the size of a hen's egg, fills the interior of the uterus; is somewhat tuberculated, and presents a dull yellowish or pinkish-white appearance. It chiefly involves the posterior superior wall of the fundus, but also infiltrates the anterior wall, and has extended into the cervix and os.

Examined microscopically, the structure of the growth is epitheliomatous. The cell-elements are not so large as those met with in cutaneous epithelial cancers, but otherwise identical. They are of various shapes, have large lustrous nuclei; towards the cervix form burrowing cylinders involving the mucous follicles and glands, and even exhibit "nests" and "globe-like" transformations—a rare occurrence in epitheliomata of the internal or deep-seated organs of the body.

The specimen was taken from a native female, aged 28, who died in hospital. *Presented by* Professor T. E. Charles.

58. "Uterus and vagina of a European woman of pure descent, who was admitted into the General Hospital with a large growth, diagnosed to be malignant, and therefore beyond the reach of remedy. She died from acute dysentery. Before admission she had lost much blood from the tumour, a portion of which had

begun to break down and fungate. The patient presented all the well marked appearances of malignant cachexia." (Ewart.) A large fungating mass is seen filling the whole of the vagina. It apparently takes its origin from the posterior lip of the cervix uteri. In parts it is quite soft and pulpy; in others firm, opaque-white, and slightly fibrous-looking.

On microscopic examination, the morbid growth presents all the characters of the ordinary cauliflower tumour or cancer of the uterus, *i.e.*, is epitheliomatous. In the midst of a very delicate fibrous stroma—only demonstrable in thin brushed-out sections—large epithelial cells are observed, some round, others spindle-shaped, stellate, and caudate, with (in most instances) single, round, or slightly oval nuclei, and a very granular and fatty protoplasm. Numerous free nuclei, and much free fat—molecular and granular—are also distributed throughout such sections. No "nests" or "globes" exist. The growth is undoubtedly an epithelioma of the cervix uteri.—J. F. P. McC. *Presented by* Dr. J. Ewart, Presidency General Hospital.

59. Epithelial carcinoma of the cervix uteri, removed during life by the galvanic *écraseur* and cautery. The body of the uterus with the ovaries, and the last lumbar vertebra,—all obtained on the death of the patient,—are preserved with the morbid growth. The latter is a fungus-looking, rounded mass, flattened from before backwards, and measuring about two inches in diameter by an inch and a half in thickness. Its surface is covered by close-set papillary outgrowths and small tuberculated excrecences. The cancer chiefly involves the anterior lip of the uterus. A small glass rod has been passed into the much-contracted cervical canal and separated body of the organ.

Examined microscopically, sections exhibit a true epitheliomatous structure;—the superficial portion of the growth consisting of villous masses, composed of closely-packed, large, epithelial cells, with well-defined single or double nuclei and nucleoli, no "nests," and a very scanty stroma. More deeply, the proper uterine (fibro-muscular) tissues are found freely infiltrated with nuclei and transitional cell forms. The blood vessels are large and numerous.

The patient was a Bengali female, aged 24, the mother of three children. The disease was of seven months' duration. The operation was performed on the 30th of April, and she died from exhaustion on the 25th May 1877.

After death, two small circumscribed abscesses were found in each broad ligament; and a large psoas abscess, with carious excavation of the last lumbar vertebra on the left side. A very healthy and clean-looking surface is presented by the uterus at the site of the amputation (of the cervix), and the body of the organ is apparently quite free from disease.

Presented by Professor T. E. Charles.

60. Carcinoma of the uterus, involving and almost completely destroying the cervical portion of the organ, and opening into the urinary bladder, just above the trigone.

The kidneys and ureters in this case were enormously dilated, and the former exhibited great expansion of the pelves and infundibula, with atrophy of the secreting structure. Sections from the diseased remains of the uterus show, under the

microscope, the typical structure of epithelioma. The growth is most luxuriant, and, at the same time, the cell elements are found undergoing rapid fatty and mucoid metamorphosis. --From a native woman, aged 40, who died in hospital.

61. "A large pyriform tumour spontaneously expelled from the uterus. At the time of expulsion it was of a brownish-red colour, and measured $5\frac{1}{2}$ by $3\frac{1}{2}$ inches. Vesicles, varying in size from a pea to that of a large bean, projected from the internal surface of a cavity as large as a walnut, found on making a section in the middle of its widest part. The spongy structure of the substance of the tumour is plainly shown in this preparation." (Ewart.)

This is undoubtedly a uterine mole. It is composed chiefly of coagulated blood, amidst which, traces of decidual membrane (casts of uterine tubules, &c.,) can be readily distinguished under the microscope. The upper, basal, and broadest portion of the mass shows vesicular or "hydatidiform" degeneration. The vesicles, here, vary in size from a pea to a nutmeg, and have thick mucoid contents, the degeneration affecting, probably, the *placental* portion of an aborted ovum.

Presented by Professor Stewart.

62. Hydatidiform degeneration of the ovum. A large vesiculated mass expelled from the uterus by a native female, aged 22, in the fourth month of her apparent third gestation. "She had twice before aborted."

(For similar preparations see also Series XVIII.)

63. "Uterus at five and a half months' gestation cut open and inverted, showing the attachment of the placenta and the foetus enclosed in the bag of membranes, which have been punctured in order to give exit to the liquor amnii." (Ewart.)

64. "Gravid uterus, with contents, at the eighth month of utero-gestation of a Portuguese, aged 35, who was admitted in a dying state. She had been suffering from remittent fever and jaundice for about eight or ten days. She died half an hour after admission. The section shows in part the attachment of the placenta. The os uteri is dilated to about the size of a rupee." (Ewart.) *Presented by Professor T. E. Charles.*

65. Uterus with its contents at about the fourth month of gestation. --From an Eurasian woman, aged 24, who died of uræmic coma.

66. Gravid uterus,—the foetus of between the third and fourth month. From a Hindu widow, aged about 25, who committed suicide by hanging. "It is said that she was subject to epileptic fits." In the right ovary is a corpus luteum the size of a shelled almond, with well-defined crenated margins of a deep yellow colour. *Presented by Dr. Mackenzie, Police Surgeon.*

67. Congenital absence of one ovary,—the right; the left, with the Fallopian tube, and the uterus, are exhibited. The uterus is of normal size, and, as well as the vagina, quite healthy. The ovary shows, on section, the remains of a false corpus luteum.—From a native woman, aged 30, who died in hospital of pneumonia. *Presented by Professor D. B. Smith.*

68. "Section of an ovary" greatly atrophied, and "showing calcareous degeneration of its stroma." (Ewart.)
69. "Abscess of the right ovarium, which opened into the fundus of the bladder. The opening made by the advance of the abscess has been enlarged by incision at the *post mortem* examination, but the irregular and jagged character of the margins that bounded the original orifice is distinctly indicated, and contrasts most obviously with that resulting from a clean incision." (Ewart.) *Presented by* Baboo Juggabandhu Bose.
70. Preparation showing an abscess of the left ovary, with acute suppurative inflammation, dilatation, and partial disorganisation of both Fallopian tubes (salpingitis). The body of the uterus is enlarged; its lining membrane thickened, rough, and villous in appearance, and, at one spot, on the posterior wall of the fundus, raised into a circumscribed fungus-like prominence the size of a rupee, which probably indicates the site of attachment of the placenta. The inflammatory changes appear to have succeeded an abortion, but no history of the case is recorded.
71. "Abscess of the right ovary, adherent to the cœcum, and opening into the rectum after recto-uterine cellulitis." (Colles.) No history. *Presented by* Professor D. B. Smith.
72. The uterus and ovaries of a native female, a prostitute, aged 23, who was delivered of a living male child, in the eighth month of her first pregnancy. Symptoms of acute endometritis supervened on the third day, followed by those of general peritonitis on the eighth day. The uterus exhibits an imperfectly contracted and subinvolted condition. It is rather larger than the closed hand; the walls are thickened and soft; the lining membrane is shreddy, in parts sloughy-looking and pus-infiltrated. The right ovary is much enlarged and swollen. On its posterior aspect was found a ragged rent, half an inch in length, which communicated with an abscess cavity occupying the greater part of the ovarian tissue. This rupture appeared to have taken place during life, a portion of the contents of the abscess thereby escaping into the peritoneal cavity, and provoking that general inflammation of the peritoneum to which the patient succumbed. (*See further, "Obstetric Post-mortem Records,"* vol. I, 1875, p. 119-20.)
73. Abscess of the right ovary, which contained more than an ounce of thick yellow pus. The ovarian tissues are greatly disorganised, and this organ with the corresponding Fallopian tube may be observed, fixed to the side and fundus of the uterus by firm peritonitic adhesions. On the left side, the same structures combine to form a cyst, the size of a hen's egg, with limpid, serous, fluid contents. The pressure upon the rectum by these diseased and enlarged ovaries has produced great narrowing of its canal (as seen in the preparation), about four inches above the anus. On the proximal side of this constriction the muscular coat of the intestine is considerably hypertrophied, probably from exaggerated expulsive efforts being required in voiding the

contents of the bowel (defecation).—From a native woman, aged 30, who died a few hours after admission into hospital.

74. Cystic fibroma of both ovaries. These organs are considerably enlarged and lobulated, their capsules thickened. On section, the structure is firm and elastic, is infiltrated with cystic formations of varying calibre, the largest, in the right ovary, is the size of a hen's egg. The uterine walls are also abnormally thickened, and its cavity enlarged.

On microscopic examination, the structure of the ovarian growths is fibro-cellular, —well formed white fibrous tissue, plentifully supplied with germinating nuclei. The normal glandular structures, *e.g.*, the Graafian vesicles, &c., are dilated; their epithelial contents multiplied (proliferated), and undergoing fatty and colloid changes.—From a native female, aged 40.
Presented by Dr. J. Ewart.

75. Carcinoma of the left ovary. The growth is now the size of the foetal head, and, in the fresh state, was associated with a large cyst, "capable of containing 40 ounces of fluid." This has been mostly cut away in order to exhibit the solid growth. The latter has a lobulated outline, is soft in consistency, and on section presents an alveolated structure. This structure is well displayed in microscopic sections, and the alveoli are found filled with degenerating, heteromorphic, nucleated, epithelial cells. The stroma (alveolar walls) is also nucleated and fatty. In parts there is softening and breaking down of the tumour tissue into more distinctly cyst-like cavities. The uterus is small, and apparently healthy. No history.

Presented by Professor T. E. Charles.

76. A preparation showing (1) acute dropsy of the Fallopian tubes, associated with tuberculosis of the peritoneum investing them, which is covered with minute miliary granulations, and in the recent state was lividly congested. (2) Both ovaries enlarged, their parenchyma and capsules similarly infiltrated with grey tubercle. In the right was found a curdy, yellowish-white deposit, the size of a walnut, consisting of cheesy, softening, tuberculous material. There was no general tubercular infiltration of the peritoneum, but acute basilar (cerebral) meningitis, with a copious exudation of recent lymph, and very minute scattered tubercles in the pia mater. The cheesy deposit in the right ovary seems to have been the centre of infection, *i.e.*, the deposit from which the dissemination of the tubercular growth proceeded. The patient, a native female, aged 25, died in hospital. ("Medical *Post-mortem* Records," vol. III, 1880, pp. 563-64.)

77. Atrophy of the uterus, and cystic degeneration of the ovaries. "The section of the right ovary shows several small cysts in its stroma (enlarged Graafian vesicles), and there is a transparent cyst as large as a bean suspended by a pedicle an inch and a quarter in length, from the broad ligament adjoining the fimbriated extremity of the right Fallopian tube. Cysts in the stroma of the left ovary are also distinguished, similar to those existing in the right one." (Ewart.)

78. Preparation showing an "unilocular cyst of the left ovary, the size of an orange, and fusiform dilatation of the corresponding Fallopian tube.—From a subject in the dissecting room.
Presented by Assistant Surgeon Chunder Mohun Ghose, M.B., Demonstrator of Anatomy.
79. "Two very large ovarian cysts. The larger one is globular, and measures 14 by 16 inches; the smaller one is of oval shape, and is about 12 inches in its long diameter." (Ewart.) The large cyst is unilocular, the smaller one multiloculated.
Presented by Dr. John Macpherson.
80. "An enormous unilocular ovarian cyst, which contained pale, straw-coloured, serous fluid. The wall of the tumour consists of two laminae, both together being about four lines in thickness. Its internal surface is regular and smooth." (Ewart.)
81. "A dried specimen of multilocular ovarian cyst, the parietes of which are now of leathery appearance, and about one-twelfth of an inch in thickness. It is divided by partitions of similar consistency and thickness into three large and three smaller compartments."
82. A very large multilocular ovarian cyst, with thick leathery walls and disseminations. No history.
83. A multilocular serous cyst of the left ovary. It has become collapsed and shrunken from long immersion in spirit, but, in the fresh state, was nearly as large as the foetal head.—Found on *post mortem* examination of a European woman, aged 51. The disease was not complained of nor diagnosed during life.
84. Multiloculated cysts of both ovaries. The right is rather larger than an orange, the left about the size of a duck's egg.—Found on *post mortem* examination of a native female, aged about 45, who died in hospital from carcinoma of the liver.
85. A large ovarian tumour, having a curious dumb-bell shape.—"From Gopce, a native female, aged 60 years,—a Hindoo."
"The tumour consists of two lobes,—an upper and a lower,—the upper, having thin transparent walls, is the size of a water-melon, and traversed on the surface by five or six depressions. The lower one, larger than the above, has also denser walls, and is subdivided partially into several compartments. The lower surface of the tumour was closely adherent to the urinary bladder." (Chuckerbutty.)
86. A trilocular cyst connected with the left ovary. The tumour was as large as the uterus in the sixth month of gestation. The largest cyst has very massive and thick walls, closely and remarkably resembling the tissue of the uterus itself, with which, indeed, they are continuous, both on the anterior and posterior aspects of the left side of the fundus of this organ. It contained 40 ounces of dark sanguineous fluid and small blood clots. Its inner surface is remarkably tuberculated, roughened, and irregular. The second cyst, about the size of two fists, projects into the first, and extends to the right side of the uterus, passing behind it and in front of the rectum. It was filled with about 26 ounces of very thick, dark-brownish, glue-like fluid.

Separated by a thin transparent septum from the second cyst is a third, projecting on the right side of the fundus uteri. It was intimately adherent to the cæcum and lower coils of the small intestine. It has very delicate walls, and contained about 10 ounces of thin, limpid, straw-coloured, serous fluid. The cervix and fundus uteri are much elongated; the uterine cavity measures about $4\frac{1}{2}$ inches; the whole organ was found pushed considerably to the right of the median line.

The remarkably thick and dense wall of the largest cyst,—measuring from $\frac{1}{3}$ to $\frac{1}{2}$ of an inch in diameter,—consists, under the microscope, of very firm white fibrous tissue, closely meshed, and with broad thick interlacements at the surface, becoming looser, laxer, and more abundantly nucleated towards the interior; throughout freely supplied with blood vessels—both arteries and veins of large size. No proper uterine tissue, *i.e.*, smooth muscular fibre, is found.

The patient was a Mahomedan female, a widow, aged 36. The presence of a tumour in the left side of the abdomen was first noticed three years prior to her admission into hospital. She had no children, and had never conceived. The tumour was diagnosed during life, and aspirated. The operation was followed by general peritonitis, and resulted in death. (*See further*, “Obstetric *Post-mortem* Records,” vol. I, 1880, pp. 741-42.)

87. “Unilocular ovarian cyst as large as a man’s head, springing from the right ovary. At the bottom of the cyst many nodular excrescences are demonstrated. The left ovary was atrophied.” (Allan Webb’s *Pathologia Indica*, No. 670, p. 290.)

Although the main cyst is unilocular, there are a large number of secondary and tertiary cysts, forming a series of nest-like growths, springing from the inner surface of the tumour at its lower part. These project in tuberculous rounded masses into its cavity. The cyst is therefore not a simple one, but compound or proliferous.—J. F. P. McC.

88. A proliferous cyst, involving, apparently, the left ovary, and also intimately blended with the left lateral wall and fundus of the uterus. The growth is the size of the fœtal head. Its walls are thick and much plicated. It was punctured during life through the upper wall of the vagina, in the situation now indicated by a red glass rod. *Presented by* Professor Allan Webb.

89. A large ovarian tumour with thick leathery walls, and intimately connected with the fundus uteri. The tumour consists of one large, somewhat oval-shaped cyst, and a series of smaller cystic growths budding out from its inner surface. These form irregularly rounded projections or excrescences, are arranged in groups or “nests,” do not intercommunicate, and are filled with a thick, mucilaginous fluid.

Presented by Professor D. B. Smith.

90. A small, probably congenital cyst of the right ovary, about the size of a nutmeg. It has a well defined, opaque-white lining membrane, and is filled with thick sebaceous material, consisting of fatty epithelial debris, in which is imbedded a small mass of delicate, long, dark hairs. Taken from a native female, aged 21, who died in hospital from asthma, &c.

91. A so-called dermoid or dentigerous cyst of the left ovary, the size of a walnut. It contained a quantity of soft sabulous material, some loose dark hair, and a cartilaginous nodule the size of a pea, &c. Attached to the fimbriated extremity of the right Fallopian tube, by a slender pedicle an inch in length, is a small grape-like simple cyst. The uterus is enlarged; its walls thick and vascular; the organ exhibits all the signs of subinvolution.—From a native female, aged 28, who died from exhaustion and diarrhœa six days after premature delivery. (*"Obstetric Post-mortem Records,"* vol. I, 1878, pp. 519-20.)
92. A multilocular and inflamed ovarian cyst, about the size of the adult head, removed by operation from a European female, aged 45. The cyst-wall is very thick,—in parts not less than one-third of an inch. The outer portion is firm, tough, and leathery, consists of well formed fibro-elastic tissue. The inner portion is soft and laminated, and composed of fibrinous (inflammatory) material undergoing organisation. In parts it is quite like granulation-tissue, in others shows incipient fibrillation and the presence of numerous small capillary vessels. Bands of similar soft fibrinous material pass in various directions between the walls of the cyst, dividing it into imperfectly defined and varying sized loculi. One separate and distinct cyst is found sessile within the mother-cyst. Its walls are firm, tough, and fibrous, and it is therefore probably an original, not an inflammatory, production. *Presented by* Professor T. E. Charles.
93. A portion of a large ovarian cyst removed by operation. The walls are here and there irregularly infiltrated with small flattened, waxy-white cancerous nodules. The cyst is not entire; considerable portions have been torn away in removal. Both outer and inner surfaces are thickened,—the former from adventitious adhesions to the abdominal viscera, the latter from flattened morbid growths, and from fibrinous deposits.

On microscopical examination, the structure of the cyst-wall consists of white fibrous tissue, with also a good deal of wavy elastic tissue. To these are superadded the products of (1st) inflammatory changes,—granulation tissue, with developing capillaries, and young connective (fibrillated) tissue; and (2ndly), of infiltrative changes,—deposits or localised growths, consisting, apparently, of small, nucleated, polymorphous, epithelial cells,—imbedded in the thickened walls, and contributing largely to the flattened tuberculous excrescences on its inner surface. The cyst is unilocular, but there are traces of broken down dissepiments in its interior, indicating that this was not its original condition. It had developed from the left ovary. The epithelial new formations are probably malignant, *i.e.*, scirrhus in character.

"The patient was a European female, aged 32, married, with one child, born three years ago. First noticed the enlargement of her abdomen ten months ago; it has gradually assumed its present size. Menstruation has been regular, coming on every three weeks.

Operation.—An incision about $4\frac{1}{2}$ inches long was made in the mesial line, from just below the umbilicus downwards. The cyst was punctured with Spencer Well's trocar and partially emptied,—

about 700 ounces of dark-reddish fluid evacuated. Very firm adhesions were found between portions of the cyst-wall and the abdominal wall and viscera, in attempting to separate which, many fragments of the cyst-wall were broken away. There were numerous nodular (apparently scirrhus) growths in the cyst-wall, and matting it to the left kidney, spleen, &c. The right ovary was found occupied by similar growths and multilocular cysts. The patient died from peritonitis 48 hours after the operation."

Presented by Professor T. E. Charles.

94. A large ovarian cyst removed by abdominal section, from a native (Hindu) female, aged 26. The cyst contained 352 ounces of fluid, besides the large semi-solid growth now exhibited within its walls. It had developed from the right ovary, and was of three years' duration. The abdomen was uniformly enlarged during life; there was no history of uterine hæmorrhage; there had been no menstruation "for the last 18 months."

The tumour was one very favourable for operation, as the woman was healthy-looking and fairly robust, and there appeared to be very few adhesions to the surrounding parts. The latter was confirmed at the time of operation,—almost the only adhesions being situated low down, between the cyst and the anterior abdominal wall, and between it and the urinary bladder. In attempting to separate them from the last mentioned viscus, it (the bladder) was accidentally lacerated. The patient bore the operation well, and was doing well for about 24 hours, but extravasation of urine taking place from the injured bladder set up general peritonitis, which proved fatal.

The cyst-wall is of leathery consistency, and from $\frac{1}{4}$ to $\frac{1}{3}$ of an inch in thickness. It is composed of white fibrous and elastic tissue. The inner surface is polished and glistening, but not smooth. It is corrugated, and irregularly and softly tuberculated, from the presence of localised spots of mucoid softening and proliferous growth. These constitute slightly projecting flattened nodules, and cystic transformations of the same character. The main cyst, however, is unilocular. Developing into it, on one side, is a semi-solid mass, as large as two fists, the free surface of which is lobulated. This mass appears to be the greatly hypertrophied and degenerate ovary, around which the cyst has grown to its present enormous dimensions. This semi-solid body is observed on section to consist of a series of round or oval cystic expansions, filled with thick opaque mucoid material. They vary in size from that of a pea to that of a hen's egg, and, as a rule, do not intercommunicate.

Under the microscope, the walls of these cystic growths are seen to be composed of well-formed connective tissue—white and glistening; the inner surface is lined by epithelium, which in some is distinctly columnar, in others, flattened. The contents have the usual appearance of mucoid material, and, suspended in it, are found small masses of cylindrical or columnar epithelium, or of small round nucleated cells, or the same two varieties of cell elements *free*. It is very evident, therefore, that the large intra-cystic mass is, as was suspected, the degenerate ovary, the cystic transformation having taken place probably at the expense of the Graafian follicles of this body, with subsequent mucoid metamorphosis. (See further, "*Obstetric Post-mortem Records*," vol. I, 1880, pp. 735-36.)

Presented by Professor R. Harvey.

95. The left ovary of a native female, aged 20, who died from puerperal eclampsia, showing a true "corpus luteum."
96. "Ovaries of a woman at the eighth month of utero-gestation, who died after parturition. Showing sections of corpora lutea, indicated by small glass crosses." (Ewart.) *Presented by* Mr. Sakes.
97. The uterus, ovaries, &c., of a native female, aged 35, who died from cholera, and aborted during the attack. The left ovary contains a large, well-defined, stellate corpus luteum of pregnancy. The right ovary is cystic and enlarged. Growing from the left broad ligament is a pediculated cyst, the size of a pigeon's egg, filled with gelatinous, amber-coloured fluid.
98. The uterus and appendages. Both Fallopian tubes are dilated, and their lining membrane rough and corrugated. The uterus is a little hypertrophied; its walls soft, the mucous membrane granular and highly vascular.—"From a patient who died from excessive hæmorrhage from the uterus."
Presented by Dr. Green.
99. Preparation showing dropsy of the Fallopian tubes, particularly of the left. Their fimbriated extremities present a convoluted, sausage-like, highly distended, and swollen condition, and contained limpid, clear, serous fluid. The walls of these structures are stretched, thinned, and almost transparent. Both ovaries are atrophied.—Found on *post mortem* examination of the body of a native female, aged 25, who died from pulmonary phthisis. No symptoms of the tubal disease during life. ("Medical *Post-mortem* Records," vol. II, 1878, pp. 847-48.)
100. Great dilatation and contortion of the Fallopian tubes, the channels of which were found completely filled with very thick curdy or cheesy material. The peritoneum investing these structures was brightly injected and highly vascular, and there are old inflammatory adhesions between them and the ovaries on either side of the uterus. The patient, a native female, aged about 36, died from acute tubercular phthisis. (*See further*, "Medical *Post-mortem* Records," vol. III, 1880, pp. 617-18.)
101. The uterus, Fallopian tubes, and ovaries of a native woman, a prostitute, admitted into hospital with symptoms of acute peritonitis, of which she died. On *post mortem* examination, there was found intense congestion and matting together of the pelvic tissues and contents. The Fallopian tubes showed livid, purplish discolouration, were greatly enlarged and dilated, and on incision, about half an ounce of pus escaped from each. The uterus is not enlarged, and exhibits no material morbid alteration. The left ovary contained a very large, dark, recent blood-coagulum. The right is atrophied. The dilated and distorted condition of the Fallopian tubes, and the inflammatory thickening of their walls, are well illustrated in the preparation.
102. A cyst the size of a hen's egg, with thick leathery walls, developed between the layers of the right broad ligament. The ovary and Fallopian tube on this side are much flattened, and adherent to the upper portion of the cyst.
Presented by Mr. P. A. Minas.

103. A small fibroma attached to the left broad ligament, but otherwise floating freely in the pelvic cavity.—Found on *post mortem* examination of a native female, aged 45, who died from chronic diarrhœa.

The tumour is the size of a betel-nut; consists, under the microscope, of fine white fibrous tissue, with also a considerable amount of wavy elastic filaments. A polypoid myoma, the size of a pea, is seen developing from the anterior wall of the fundus uteri.

104. "Uterus, vagina, and greater portion of the external parts of generation of a young Mahomedan female, displaying laceration of the perineum and a considerable portion of the vaginal sheath, the effect of violence done to the parts on the first act of copulation, by which a violent hæmorrhage, to the destruction of the child (barely 12 years old), was occasioned. The uterus and parts concerned are diminutive and undeveloped, as might naturally be expected at that tender age, and before the process of menstruation had been established. The coagulum at the bottom of the jar was removed from the vagina after death.

The sudden and unlooked for death of the child on the first night of her marriage, and the unaccountable quantity of blood found beneath the bed, and upon her linen, led to the suspicion of unfair means having been resorted to for her destruction. The body having accordingly been exhumed to ascertain the cause of death, the vagina and perineum were found ruptured in the manner above described, and as represented in the preparation. But as a judicial enquiry elicited no facts or circumstances tending to show that any unlawful means had been made use of by the husband to effect his purpose, and his generative organs presenting nothing unusual to account for the appearances, while the immediate cause of her death was satisfactorily explained by loss of blood from the vagina, it may be considered a case of extreme preternatural weakness or laxity of the genital system of the female, and of very rare occurrence, for the common practice of Eastern nations in forcing sexual intercourse upon children of even earlier years than the subject of the present enquiry would not appear to be attended with similar disastrous consequences." (Allan Webb. *Pathologia Indica*, No. 204, p. 285.)

105. The vagina and uterus from a case of instrumental labor (craniotomy and exvisceration). The preparation shows a greatly lacerated condition of the vagina, with a large rent in its posterior wall opening into the rectum. The lips of the uterus are enormously swollen and torn. The uterus itself is rather larger than two fists. Its walls are exceedingly massive and thick, measuring from two to two and a half inches at the fundus. Its inner surface is shreddy, and was deeply blood-stained. The left ovary contains a true corpus luteum of pregnancy. The thickening of the uterine walls is quite abnormal, and apparently indicates a condition of chronic myo-metritis, or slow and interstitial hypertrophy of all the uterine tissues.

The patient was a Bengali widow, aged 23. It was her second pregnancy. The first labor had taken place 18 months previously; the fœtus was dead and extracted by native midwives with great difficulty, and after much laceration of the soft parts, but no instruments were used. On this occasion (second labor) the vagina was found to end in a kind of cul-de-sac two inches from the vulva. At the distal end of this pouch was a small

orifice, through which a uterine sound could just be passed. This was dilated with laminaria and tents of sola-pith, but, when a freer examination could be made, the pelvis itself was found to be much contracted. Craniotomy was therefore performed, and even then, owing to the contracted condition of the vagina and the numerous cicatricial bands passing from side to side between its walls, great difficulty was experienced in delivering the woman. Several of the latter (bands) had to be freely incised before the whole of the foetus was brought away—piecemeal. The patient died 16 hours after delivery. (See further, "Obstetric *Post-mortem* Records," vol. I, 1879, pp. 625-26.)

106. The pelvis from the above case, showing the contraction at the outlet, which increased the difficulty of delivering the patient. The measurements are (1) oblique conjugate $4\frac{1}{4}$ inches; (2) antero-posterior at outlet $3\frac{3}{4}$ inches; (3) transverse at outlet $3\frac{1}{4}$ inches.
107. "Specimen showing a recto-vaginal fistula. The opening in the rectum begins about half an inch within the verge of the anus, and that of the posterior wall of the vagina is about the same distance from the frœnum. There is much thickening of the parts about the fistula, which is indicated by the insertion of a red glass rod. There is a small globular cyst attached to the left ovary, as large as a hen's egg." (Ewart.) No history.
Presented by Dr. Chuckerbutty.
108. Complete prolapsus of the vagina, removed *post mortem* from a native female, aged 35, who died of acute dysentery. The integumental-like transformation of the chronically everted mucous membrane is well demonstrated. The urinary bladder has been opened, and may be seen to the left of the uterus; the latter is greatly elongated, and its cavity narrowed.
109. "Vagina and os uteri largely covered over with superficial and deep ulcers. The latter are circular, having completely penetrated the mucous membrane." (Allan Webb.) No history.
110. A polypoid fibroma of the vagina. The preparation exhibits (1) the uterus much enlarged, and its walls greatly thickened. (2) The urinary bladder healthy, and the urethral canal patent. (3) The vagina large and capacious. Growing from its anterior wall, near the orifice, is a polypoid tumour as large as a potato. The pedicle is short and thick; the fundus superficially ulcerated, probably from exposure, as the tumour must have projected external to the vulva. It is invested by the mucous membrane common to or continuous with that of the vagina. The tumour tissue is firm, and fibrous-looking on section, consists of well formed fibrous tissue, the fasciculi of which decussate in various directions, are intermixed with elastic filaments, and contain also smooth muscular tissue, fat granules, &c.: in fact, the structure of the polypus is strictly homologous with that of the vaginal wall or matrix from which it has developed. No history.
111. "Preparation showing an almost hermaphrodite condition of the organs of generation in a foetus. Female organs predominate. There are ovaries, Fallopian tubes, small uterus, vagina, hymen with female urethra. Above there is a penis (clitoris), with prepuce and glans, but there is no communication with the

bladder. What appears to be the scrotum is probably the exaggerated labia majora." (Ewart.)*

Webb's *Pathologia Indica*, No. 576, p. 285.

112. "Extensive sloughing ulceration of the left labium, and upper part of the pubis on the right side, from a young native girl who suffered from spleen disease, and had mercury given her for the cure of syphilis." (Ewart.) *Presented by* R. W. Righton, Esq.
113. "Elephantoid hypertrophy of the labia minora, and of the clitoris." (Ewart.)
Presented by Assistant Surgeon Kasi Nath Dutt.
114. "Elephantoid hypertrophy of the labia majora and clitoris." (Ewart.) *Presented by* Professor S. B. Partridge.
115. A similar specimen, but of much larger size. The hypertrophic growths of the labia are ovoid in shape, very massive, and dense; that involving the clitoris and labia minora is more irregular, much lobulated, and more soft and succulent in consistency. *Presented by* Professor Harrison.
116. "Elephantiasis of the labia, nymphæ, and clitoris of a native woman, aged 30. It weighed 29 ounces when removed, and was of two years' standing." (Ewart.)
Presented by Professor S. B. Partridge.
117. Elephantiasis of the left labium, associated with warty or condylomatous growths around the anus. These growths were removed by operation at the same time, and are exhibited together. The labial tumour was of six years' duration. The patient, a native female (widow), aged 30, had suffered from gonorrhœa, but gave no history of syphilis. "Her husband is said to have had an elephantoid scrotum. She has suffered from periodic fever—latterly every month; each attack has been accompanied by painful swelling of the hypertrophied labium." *Presented by* Professor J. A. Purefoy Colles.
118. Elephantiasis of the clitoris and labia majora,—from a native woman, aged 30, a public prostitute. The growths are said to have been of one year's duration. There was no hereditary history. The woman was born at Allahabad, and had lived since the age of 10 at "Soora," an inland village three miles east of Calcutta. Has suffered a good deal from malarial fever; and, since the commencement of the growth, *i.e.*, last twelve months, has, as a rule, had ague twice a month. The disease first showed itself as a small wart or pimple between the clitoris and right labium. It has attained present dimensions gradually, and is described as becoming swollen and painful with each attack of fever. The hypertrophied clitoris and labia exhibit, very characteristically, the general and microscopic structure of "elephantoid" growths. The former is the size of a small orange, constricted at its base, and marked here by a deep groove of ulceration. The latter (labia) have a lobulated and

* The only marked peculiarity in this preparation is the abnormal size and penis-like character of the clitoris; all the other genital organs are clearly those of a female fœtus.—J. F. P. McC.

warty appearance, and a somewhat piebald colour from inequality in distribution of the integumental pigment.
Presented by Professor J. A. P. Colles.

119. Elephantoid hypertrophy of the labia and clitoris.—From a Hindu woman, aged 25. The right labium is more enlarged than the left. All the diseased parts show a very characteristic tuberculated and thickened condition of the integumental structures. The growth is of seven years' duration. It commenced,—according to the patient's statement,—after soft chancre. "On the healing of the sores the labia began to enlarge and thicken; but she has also had frequent attacks of intermittent (malarial) fever, and, at these times, there has been noticed painful swelling of the affected parts. She has lived chiefly at Burdwan." *Presented by* Professor H. C. Cutcliffe.
120. A portion of an enormous elephantoid growth of the vulva. The clitoris and labia minora are only preserved; the labia majora were also affected, and the whole mass when removed weighed 7lb 10 ounces. The patient was a native female, aged about 30; a resident of Bankura. There was a distinct history of repeated attacks of fever, associated with lymphangitic swellings in the groins and axillæ. The present growth was of about 12 years' duration. It has a very characteristic lobulated and tuberculated appearance.
Presented by Professor K. McLeod.
121. "Condylomatous excrescences springing from the labia pudendi." (Ewart.)
122. "Condylomata upon the clitoris and nymphæ." (Ewart.)
123. "Condylomata upon the labia pudendi." (Ewart.)
124. "Extensive warty, pendulous tumours" (condylomata) "of the nymphæ and clitoris of a native woman. That of the right nymphæ particularly large, and superficially ulcerated on its vaginal aspect." (Colles.) Around the lower half of the orifice of the vagina, and encircling the anal margin, there are similar but smaller growths. They are all soft and succulent in consistency, deeply fissured; have narrow conjoined pedicles, and expanded, flattened, tuberos free extremities.
125. Syphilitic warty growths—condylomata—of eight months' duration, removed by operation from the skin around the margin of the anus of a native female, aged 22.
Presented by Assistant Surgeon Ramnarain Dass.
126. A condylomatous growth affecting the clitoris and labia minora of a young native female, a prostitute. It first appeared as a small pea-like nodule upon the prepuce of the clitoris. "The patient had syphilis about a year ago, and has suffered much from pruritus vulvæ." The growth is the size of one's fist. It is highly lobulated. The surface of the lobules is smooth, their divisions shallow. Individual lobules vary in size from a millet-seed to a walnut. To the feel their substance is soft,

spongy, and elastic ; on section presents a yellowish-white or creamy colour, and fibro-adipose structure.

Under the microscope, there is observed (1) very slight increase of the cuticular layer ; (2) more change in the papillary layer—the papillæ well marked, large, extending deeper into the cutis vera than is normal ; (3) most alteration in the deeper strata of the cutis vera. The great bulk of the tumour seems to be composed of exuberant and thickened connective or fibrous tissue, freely infiltrated with a small, round, nuclear or corpuseular growth, the individual elements of which have the appearance and size of ordinary leucocytes. This is most abundant around the cross and longitudinal sections of the arteries. The latter are large, and their accompanying veins dilated. There is a resemblance, therefore, in the general structure of the growth to “elephantoid” tumours ; the cellular infiltration, however, seems to be more luxuriant, and the papillary and epithelial layers of the skin less affected. The highly cellular and vascular character of the growth are its chief and distinguishing peculiarities, and it thus approaches in structure more nearly to syphilitic infiltrations of the skin. The probabilities are, therefore, that this is a condylomatous tumour—that term being understood to represent an overgrowth of already existing parts under a specific irritation. The structure does not, when minutely compared, resemble simple elephantoid growths of these parts (labia)
Presented by Professor T. E. Charles.



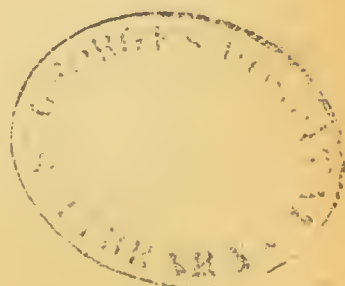


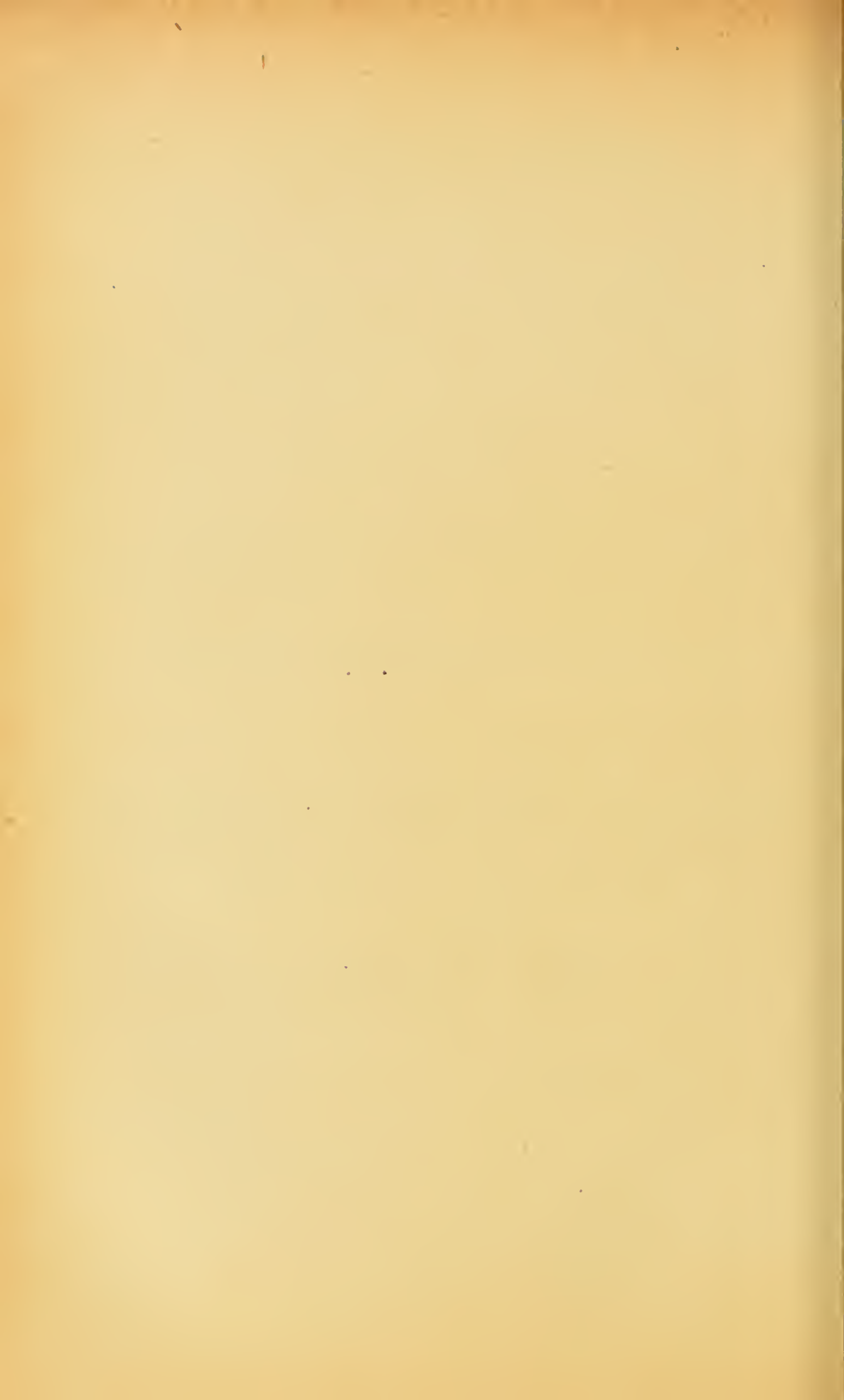
CATALOGUE
OF THE
PATHOLOGICAL MUSEUM,
MEDICAL COLLEGE, CALCUTTA.

PART VIII.

DISEASES OF THE MAMMARY GLAND, AND
DISEASES OF THE ORGANS OF SPECIAL
SENSE, AND OF THE SKIN.

SERIES XV AND XVI.





SERIES XV.

DISEASES OF THE MAMMARY GLAND.

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B.—MALE BREAST—

1.—TUMOURS AND MORBID GROWTHS :—

- (a) Fibroma, 26.
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1. A tumour involving the right mamma of a native woman, aged 20. It has ulcerated at one part through the skin,—over a space as large as the palm of the hand. The nipple is not implicated, though somewhat depressed or retracted. The tumour, on section, presents a lobulated or nodulated appearance,—the lobules varying in size from that of a pigeon's egg to that of a potato. Their structure is firm, but elastic; smooth and fibrous-looking on incision, and of a yellowish or pinkish-white colour.

Under the microscope it is found almost purely fibrous. Some glandular tissue is certainly met with, but evidently in an atrophic condition,—the acini small and compressed, the tubules obliterated, their lining epithelium shrivelled and fatty-looking. The growth has been periacinous and peritubular in character. The connective tissue, not the gland structure of the mamma, has been affected, and has undergone enormous fibrous development. This fibrous tissue is well formed, sparingly nucleated, and possesses but few large blood-vessels. By its progressive increase and growth, pressure has been exercised upon the proper secreting structure, and has led to its atrophy. The tumour is a pure *fibroma*; not an adenoma.

* See also Series XVII.

The patient was a married woman, had one child, born four years ago, which, however, died soon after birth. She is said to have contracted syphilis from her husband. There was no history of injury or blow, &c. She was anæmic and weakly-looking, and had suffered considerably from malarial fever.

Presented by Professor K. McLeod.

2. Sarcoma of the mamma. The growth with the gland forms a mass the size of two fists. It affects only the superficial portion of the latter; the basal part of the breast remains healthy. The skin is ulcerated in two situations, and through these the tumour tissue protrudes in the form of large, soft, globular, fungoid-looking masses,—one the size of a small orange, the other of a hen's egg. At the upper part of the former the nipple may be seen.

Microscopic examination of the growth shows its structure to be highly cellular; the cells, mostly rounded and uniform in size, vary from $\frac{1}{10000}$ to $\frac{1}{6000}$ of an inch. A few are spindle-shaped. The larger cells contain distinct large nuclei, usually single. There is no stroma, and only a scanty granular, or faintly-fibrillated intercellular substance. The consistency throughout is soft. The tumour is, therefore, a large round-celled or alveolar sarcoma.

The patient was a native female, aged 50. "The disease was of three months' duration, and some of the axillary glands were affected and removed at the same time as the breast."

Presented by Professor S. B. Partridge.

3. A large malignant tumour of the left mamma. From a Hindu female, aged about 45. "It commenced on the anterior aspect of the breast, a little to the left of the nipple, three months ago." The present dimensions are (1) circumference, laterally, 28 inches; (2) antero-posterior circumference, 24 inches; (3) weight immediately after operation, 10 pounds. "The patient made a good recovery."

The tumour involves the whole gland; it is intimately adherent to the skin, largely lobulated in outline and also on section. The nipple is not retracted.

Under the microscope the structure consists of small spindle-shaped and round nucleated cells, closely and densely massed together. No stroma. Is therefore *sarcomatous* in character.

Presented by Assistant Surgeon Ram Chunder Sen, Bhowanipore.

4. The right breast amputated for a tumour supposed to be of cancerous nature. From a native female aged 27. The growth is said to have been of five months' duration.

The tumour is about the size of the foetal head. A portion of the skin, including the nipple, which has been removed with it, appears to be healthy; the latter unretracted. The growth is ovoid in shape, but flattened at the base, which rested upon the pectoral muscles,—fragments of which can be traced still attached to this part. No distinct capsule exists. Outline undulating rather than lobulated. Substance soft and succulent. On section, the tumour has an opaque-white or pinkish-white appearance. Is here and there lobulated and

fibrous-looking from the existence of portions of gland structure not thoroughly involved. The principal mass, however, has a uniformly smooth, or but slightly granular, cut surface. In parts is quite pulpy, and has a sanguineous tinge,—the results of secondary metamorphoses.

Microscopic structure. Fine sections of the tumour present a densely cellular structure, and, even after careful brushing out under water, little or no trace of any intercellular material is found. The proper gland tissue (acini and tubules) has almost completely disappeared. The cells are round or oval, and very uniformly so; in size vary from that of a white blood-corpuscle to elements three or four times this size. They are finely granular, and possess from one to four large, well defined nuclei. In the smaller cells the nucleus occupies almost the whole of the protoplasm. Between the cells soft, finely granular, amorphous material can here and there be detected, and in some sections a certain amount of fibrillated connective tissue—apparently the remains of the original gland tissue. The tumour is undoubtedly a *sarcoma*, and a well-marked example of the large round or oval-celled (alveolar) variety.

With this tumour is also preserved the *recurrent growth*, which appeared, about two months after amputation, in the cicatrix left by that operation, and which showed, on microscopic examination, distinct evidences of similar (sarcomatous) structure to that of the primary tumour. It was also removed by operation. A second recurrence, however, took place, and large fungoid masses appeared along and in the neighbourhood of the cicatrices. Secondary or metastatic developments now occurred also in the lungs and liver, and the patient died worn out and exhausted by the disease. *Presented by* Professor S. B. Partridge.

5. Malignant (sarcomatous) tumour of the left breast. From a native (Mahomedan) female, aged about 40. It was of very rapid growth, having attained present dimensions in about seven months. "The breast was twice lanced for supposed abscess, each operation only accelerating the growth of the tumour." The latter consists of a large lobulated and fungus-looking mass, the size of the closed hand. It appears to involve the whole of the mamma, and to have deeply infiltrated the subjacent cellular tissue and nearest lymphatic glands. Over the greater part of its surface the skin has given way—been ulcerated. No trace of the nipple can be discovered; its position is marked by a kind of crucial depressed cicatrix. On section, the tumour is seen to be greatly disorganised and softened at its central and basal portions; towards the upper part and circumference is of greater consistency, but is still soft and succulent, and of an opaque-white, more or less homogeneous appearance.

Under the microscope, the structure is densely cellular—the cell elements being about twice the size of blood-corpuscles, round or spindle-shaped, mono-nucleated and granular. Very little intercellular substance—and that amorphous in character—exists, and no true stroma. The tumour is a true sarcoma, not a cancerous growth.

Presented by Professor W. J. Palmer.

6. Chronic mammary glandular tumour (adenoma) "removed from the right breast of a native woman about 60 years of age. It weighed four pounds thirteen ounces. The patient died from

shock, and fatty degeneration of the heart. The liver was also fatty and soft. The other viscera were healthy."

Presented by Professor J. Fayrer.

7. Cystic adenoma of the mamma. From a lady, aged 52. "It had been of slow growth and painless for several years, but within the last two years had increased rapidly and occasioned much distress." The nipple is seen a little retracted. The tumour-substance is semi-solid and elastic to the feel, and on section is seen to consist of a series of cystic dilatations,—the largest about the size of a walnut. Their contents were varied. Some were found filled with dark, grumous, bloody-looking fluid; others with thick, glue-like, brown, greenish-brown, or chocolate coloured material; and others again, have semi-solid intracystic growths, developing, as it were, from their walls. These growths present, under the microscope, only an exaggerated condition of the normal glandular structure of the mamma—the lactiferous tubules hypertrophied and filled with epithelial cells in a state of fatty degeneration. No cancerous or other malignant structure.

Presented by Dr. J. Ewart.

8. Amputation of the right mamma for a large adenomatous tumour involving the whole gland. The patient was a native female, aged about 45. The tumour is about the size of a cocoanut. The nipple is unaffected and unretracted. On one side of it are two large ulcerations of the adjacent skin,—each about the size of the palm of the hand. The outline of the growth is irregularly and deeply lobulated, a condition which is preserved when sections are made through it. The consistency is firm. The cut surface is white and glistening, and an innumerable series of cyst-like expansions or acini are brought into view. These are filled with soft semi-solid or pultaceous contents. In most instances these contents assume a fungating appearance, which, moreover, is especially marked towards the periphery of the gland,—here huge, tuberculated, fungoid growths are seen projected from the main mass of the tumour, and protrude from the ulcers, above described, at its surface. A tolerably well-defined capsule of connective tissue invests the tumour, and there is no evidence of infiltration of the surrounding parts.

Under the microscope, the normal acinous structure of the gland is seen to persist, but the individual acini are enlarged and distorted,—expanded evidently by an intramural growth of epithelial cells of the ordinary glandular type. The acini are separated by bands of delicate connective tissue, into which the cell growth does not extend. Many of the intra-acinous cells are highly fatty, and so also is much of the inter-acinous and intertubular tissue. The whole gland does not appear to be equally affected—some parts presenting an almost normal appearance. The exaggerated and morbid growth is most marked in a portion, the size of an orange, situated just beneath the cutaneous ulceration. The tumour altogether is a very typical and well-marked example of *acinous adenoma* of the mamma.

9. Cystic adenoma of the left breast. From a native female, a widow, aged 30. "The tumour is of fourteen months' growth, and was quite painless until the last month; and latterly the axillary glands have become enlarged."

The morbid growth, involving apparently the whole gland, forms a mass about the size of the adult head. It is broadly lobulated and cystic to the feel. On section, a large portion of the central part of the tumour is seen hollowed out into a cyst, larger than an orange, which contained much broken-down, softened, cheesy, or sebaceous material. Several smaller cysts surround this large one. The circumference of the tumour is more solid, and has a very characteristic adenomatous appearance; consists of a series of large acini or loculi occupied by solid, vegetating contents. These acini are of all sizes, the largest as big as a nutmeg, the smallest about that of a pea. There is a firm fibrous capsule investing the whole tumour.

On microscopical examination, the structure of the growth consists of dilated and enlarged acini bound together by loose connective tissue (plentifully infiltrated with nuclei and fat granules) and filled with degenerating fatty epithelium. There is no heteromorphic cell development, &c. The tumour is therefore an *adenoma or chronic mammary glandular tumour*, and is only peculiar from the circumstance of its having undergone so great softening (fatty apparently) and pseudo-cystic transformation towards its centre.

10. Scirrhous of the mamma. The whole of the breast and a portion of the superjacent skin have been excised *en masse*. The nipple is retracted and surrounded by a slightly raised and thickened areola. There is no ulceration of the integumental structures. On section, the gland has a very dense, hard, almost stony consistency, and a yellowish-white, faintly-fibrous appearance.

On microscopic examination, both the fibrous stroma and characteristic cells of scirrhous cancer are well seen; the former is particularly thick and small-meshed.

11. Preparation showing carcinoma of the left breast, with recurrence of the growth in the cicatrix of the operation after an interval of about a month. "From a female patient (Goya). Duration six months." In the first operation the whole of the gland was removed. It has a yellowish-white appearance on section, and is very dense and firm. The structure of the morbid growth is that of true scirrhous,—both stroma and epithelial elements being well developed. In the recurrent nodule the structure is equally typical, but the consistency much softer. It has developed at one extremity of the cicatrix left by the first operation. *Presented by Professor J. Fayrer.*

12. "Scirrhous of the breast. From a native female, aged 42. Removed by Dr. Fayrer on the 21st January 1865. Contains a fibrous stroma and nucleated cells. Disease returned and proved fatal in 1866." (Colles.)

13. "Mamma of a native woman, removed for scirrhous cancer of two years' standing. The incipient ulceration round the nipple was the result of the application of leeches by advice of a native *kobraj*.

Microscopic examination showed a matrix consisting almost wholly of yellow elastic tissue, containing in its interstices numerous flat polygonal cells, with granular contents." (Colles.)

The remarkably hard and nodulated condition of the growth is well displayed in this preparation.

14. "Scirrhus tumour of female breast. Its section was dense, and cut like gristle or cartilage. Many cells of oval character, nucleated, large, some caudate, some irregular, and some in a state of fatty degeneration, were found on microscopic examination, as also a great deal of fibrous tissue. The tumour had begun to fungate through the skin." (Ewart.)

15. Scirrhus of the mamma; from a native female, aged 45. The nipple is remarkably retracted and ulcerated. The growth appears to involve the whole of a somewhat atrophied gland. It is extremely firm and hard. On section, has a yellowish-white fibrous appearance, radiating processes from which can be traced into the surrounding adipose tissue.

The structure, microscopically, is typical. The stroma very dense, and, just below the nipple, quite cicatricial in character. At the periphery of the growth the cell elements are moderately large, epithelioid, nucleated, and granular. The infiltration of the surrounding non-glandular tissue is also very distinct.

The lymph-glands in the axilla were indurated and cancerous: several were removed at the same time that the breast was amputated.
Presented by Professor J. Fayrer.

16. Scirrhus of the left breast,—said to be a growth of only six weeks' duration.

This is a small, cicatricial-like nodule, the size of a nutmeg, surrounded by much soft, fatty tissue. (When excised, the whole mass was about the size of an orange, but much of the surrounding adipose tissue has been removed). The growth proper has a dense white, slightly fibrous appearance, with a stellate margin, sending out processes or prolongations into the surrounding adipose tissue. It is firm-cutting like cartilage. On scraping the cut surface, a small quantity of highly fatty (milky) juice is obtained, in which, however, a few epithelial cells with large nuclei can be seen.

When sections are placed under the microscope, the structure is found to be densely fibroid, but clefts or spaces—scarcely amounting to alveoli—also exist, which are filled with true glandular epithelium. These cells are rounded or angular, only a few caudate; the majority have single large nuclei; all are granular from fatty metamorphosis. The epithelial proliferation is not at all abundant, and the alveolar stroma imperfect—conditions remarkable if the growth was, as is stated, of only six weeks' duration.

The tumour was removed from a European female, aged 65.

Presented by Dr. E. Lawrie.

17. Scirrhus of the left breast, removed by operation, "from an East Indian female, aged 28 (?). The tumour is of ten months' duration. No hereditary history of cancer. A chain of lymphatic glands in the axilla were enlarged. The tumour had been very painful during the last four months. The patient is healthy-looking."

The excised mamma with adjacent adipose tissue forms a mass the size of a large orange. The amount of fat surrounding the

gland is very considerable ; the latter is shrunken and atrophied. On section, it is very dense, firm, and compact,—cuts like cartilage ; has a yellowish-white colour, and fibrous appearance. The nipple is considerably retracted. There is no ulceration of the superjacent skin, a portion of which has been removed with the diseased gland.

Under the microscope, a typically scirrhus structure is found, the stroma being particularly well developed,—formed of broad bands of nucleated connective tissue, leaving small alveolar spaces by their interdigitations, and these occupied by epithelioid, nucleated, polymorphous (cancer) cells.

Presented by Professor S. B. Partridge.

18. Carcinoma of the female breast. The whole mamma was extirpated, and also a mass of enlarged glands from the axilla ;—the former is only preserved. The nipple is retracted, but not ulcerated. The morbid growth consists of a nodule as large as a potato, situated just beneath the skin ; the rest of the mammary structure seems to have been converted into fibro-adipose tissue. The scirrhus nodule is very dense and hard ; has a yellowish-pink colour, and faintly fibroid appearance on section.

Under the microscope, the structure is found to be characteristically carcinomatous (scirrhus), and rapidly developing. The stroma is well marked ; the cells are round or angular, with large nucleolated nuclei, lying heaped up in great profusion in alveolar spaces, and also projecting, in the form of elongated processes, into the surrounding fibro-adipose tissue. The cell proliferation,—especially in nuclear form,—reaches and involves the cutis vera.

Sections from the axillary glands showed distinct transformation of the lymphoid into carcinomatous structure.

The patient, an East Indian female, a widow, aged 40, stated that the disease was of about fifteen months' duration ; “no injury or blow is remembered to have been received, nor has she had recourse to any local treatment. No great pain was felt for a year after the appearance of the tumour.”

Presented by Professor K. McLeod.

19. Enkephaloid cancer of the breast. The whole of the mamma has been excised, but the morbid growth occupies only a portion of the gland,—a rounded, softish nodule, the size of a small orange, immediately beneath the skin, and in close proximity to the nipple. It consists of large, irregular, epithelial cells, grouped together in great abundance in spaces or alveoli formed by a connective tissue stroma. The latter is scanty and fibrillated in character, not firm and dense as in scirrhus. No history. *Presented by* Professor D. B. Smith.

20. Recurrent medullary carcinoma of the female breast. The preparation exhibits the portions of the diseased gland removed in the successive operations. It is recorded that the primary growth was a small, “fibro-cystic tumour,” near the nipple. It was removed ;—but the wound had scarcely healed when a truly cancerous nodule appeared in the cicatrising line. Almost the whole of the breast was then excised. After this, the patient, a European lady, aged 40, “preserved a good state of general

health as well as complete immunity from the disease for about three years." A recurrence then took place near the cicatrix, not in it. A tumour, the size of a walnut, was now excised, and found to possess a truly cancerous (medullary) structure. In a month's time, a small pea-like growth again appeared, was of the same structure, and was also removed. This made the *fourth* operation. Lastly, in another three weeks, an indurated and tuberculated condition of the cicatrices left by the third and fourth operations having been observed, it was deemed advisable to remove them, and also a considerable portion of the surrounding integument. The ultimate result is not recorded.

An examination of the fragments of the recurrent growth preserved, reveals under the microscope, all the characters of a fast-growing encephaloid cancer. The cell elements are very abundant, large, nucleated, and fatty;—the stroma scanty, but forming well-defined alveoli, &c.—J. F. P. McC.

Presented by Professor J. Fayrer.

21. "Cancerous tumour removed from the right breast of a native female, aged 45 years. Tumour of four years' standing."

This is a large fungating growth, occupying almost the whole of the mamma, which is deeply ulcerated in the region of the nipple. Its structure, microscopically, is that of encephaloid carcinoma.

Presented by Professor J. Fayrer.

22. Colloid carcinoma of the mamma. "Right breast of Mrs. M—, aged 36, mother of seven children. The breast became affected with malignant disease about fifteen months ago. After her admission a great portion of the tumour sloughed away, leaving an ulcer, which is seen on the front of the breast, with sides nearly approximated and deep perpendicular edges. The breast was removed, together with a considerable quantity of the morbid growth, which extended into the axilla as far as the sheath of the axillary vessels." (Colles.)

Examined microscopically, the structure of the morbid growth consists of large, irregularly-rounded spaces or alveoli, filled with mucilaginous flickering material only, or exhibiting the remains of degenerate epithelial cells—granular, fatty, and much broken-up. The stroma composing the alveoli is formed by delicate, soft, connective tissue, also freely infiltrated with glistening mucoid or colloid globules.

The structure of the extirpated axillary glands, and of the rest of the morbid tissue above referred to, is very similar.

Presented by Professor J. Fayrer.

23. "Cancerous tumour removed from the breast of a native woman." This is a large fungating tumour involving a considerable portion of the mammary gland. It exhibits, under the microscope, all the well-known characters of "epithelioma."

Presented by Dr. Bird, Howrah Hospital.

24. Epithelioma of the mamma (right); from a native woman, aged 35 years. The growth presents a broad, ulcerated, foul surface. The whole of the gland is involved, as well as the superjacent skin, and the surrounding cellulo-adipose tissue. The glands in the axilla were greatly enlarged and indurated. The consistency

of the growth is firm ; the colour pale-yellowish, in parts mottled and blood-stained.

On microscopical examination, the proper structure of the mamma is seen to have disappeared to a considerable extent. Here and there in a section an atrophied lobule may be discerned, the contained (secreting) cells in an advanced stage of fatty degeneration. Epithelial cells of varying size and contour—mostly fatty or very hyaline, many withered and distorted—infiltrate the gland substance in every direction, replacing its proper structure. The interlobular connective tissue of the gland is found rapidly proliferating and softening,—exhibits very numerous nuclei and young epithelial elements.

The tumour is said to have been of one year's growth, had ulcerated and rapidly increased during the last four months prior to admission and operation.

Presented by Professor H. C. Cutcliffe.

25. "A unilocular globular cyst, removed from the female mamma, about four-and-a-half inches in diameter, with a portion of the superimposed skin *in situ*. Its wall, the inner surface of which is smooth, is about the sixteenth of an inch in thickness." (Ewart.) No history.

26. Left mamma of a native male, aged 24 years, by occupation a cultivator,—amputated on account of a tumour,—a growth of five years' duration. There was no enlargement of the axillary or other lymph-glands.

This is a flattened mass, rather larger than the palm of the hand, and from half an inch to an inch in thickness. It includes the whole gland, which has been cleanly removed down to the deep fascia covering the pectoral muscles. The nipple is somewhat large, prominent, and unretracted. The surrounding skin—a portion of which has been removed with the mamma—is unaffected, and not adherent to the gland. On incision, the structure of the growth is very firm, brilliant-white, fibrous-looking, and throughout dotted about with rounded, firm nodules, about the size of tapioca-grains. These consist, as seen under the microscope, of the atrophied remains of the proper glandular structure, while the main bulk of the growth is composed of firm white fibrous tissue, sparingly nucleated and vascular.

It is therefore a *fibroma*, and quite a benign tumour.

Presented by Professor D. O'C. Raye.

27. Scirrhous cancer of the male breast, with enlarged and infiltrated axillary glands. The patient was a Hindu, aged 45. The growth is said to have been of two years' duration.

The tumour is somewhat ovoid in shape, lobulated, and very hard and firm in consistency,—cutting like cartilage. It presents a dense fibrous appearance. The skin is adherent to the gland, especially in the neighbourhood of the nipple; the latter is small, fixed, but not retracted. On one side of the growth the skin has ulcerated over a space rather larger than a rupee (florin). Of the lymph-glands—removed at the same time—one is the size

of a walnut, the others smaller ; all are firm, indurated, and fibroid on section.

On microscopic examination of the mammary growth, the structure is found to be typically scirrhus towards the peripheral portions. The stroma is very well formed, thick, and nucleated ; the epithelial proliferation within the alveoli distinct ; the cells round, spindle-shaped, or angular (polymorphous), nucleated, and granular from fatty changes. Towards the central parts, the cell elements have almost completely disappeared, and only broad bands of fibrous tissue exist, with, here and there, small interspaces filled by dark, granular, fatty *débris*. Throughout the tumour the stroma is unusually well developed, and would seem to indicate chronicity of growth. The comparative scantiness of the epithelia may possibly be attributed to the imperfect development of this gland in the male subject.

The lymph-glands are undoubtedly infiltrated with cancerous germs. Sections from them show, also, great increase of the fibrous parenchyma, with scattered foci of epithelial cells,—mostly small and round, but quite different from the ordinary and unchanged lymphoid cells observed (elsewhere) in the same sections.

Presented by Professor D. O'C. Raye.

28. A malignant tumour (small-celled, spindle-celled sarcoma) of the male breast. From a Hindu, aged 52.

The growth is as large as an orange, and has been freely extirpated. It is slightly lobulated ; has no distinct capsule,—being intimately and inseparably connected with the skin above, and the cellulo-adipose tissue of the mammary region below. On bisection the tumour has a brownish, slightly fibrous or fibrillated appearance, and consists of a series of closely cohering nodules of varying size. The consistency is soft, except in one nodule more deeply situated than the rest, and about the size of a walnut ; this is very firm, and almost cartilaginous on section.

Microscopically examined, no trace of glandular structure is to be found. The small nodule, last referred to, consists entirely of fibro-cellular (connective) tissue, arranged in more or less circular or concentric strands. The greater bulk and softer portions of the tumour consist of closely packed, small, nucleated, spindle-shaped cells, with no formed intercellular substance, and certainly no stroma.

Presented by Dr. E. Lawrie.

SERIES XVI.

DISEASES OF THE ORGANS OF SPECIAL
SENSE, AND OF THE SKIN.

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 3. Eyeball extirpated for acute glaucoma. The cup-shaped depression of the optic disc, interruption of the retinal vessels at its margin, and retraction of the optic nerve, are all well seen.
 “The disease was altogether of six months’ duration, but the acute symptoms only came on about a fortnight before the operation.”
 “On opening the globe the whole of the choroidal epithelium was found thinned and degenerated, and the choroidal structure exposed in many places owing to shredding of the epithelial layer. The vessels were also enlarged and very distinct.” The subject was an East Indian gentleman, aged 72.
Presented by Professor H. Cayley.
 4. A rounded tumour, the size of a small walnut, developing from the sclerotic coat at the upper and anterior aspects of the globe of the eye, and pressing upon the latter. The optic nerve is not involved, and its structure is apparently healthy. The tumour-tissue is somewhat soft, of a pale-yellowish colour, smooth and homogene-

* From frost-bite.

† „ burn.

‡ „ “*moxa*”.

§ „ rabies (hydrophobia).

|| See further, Series XVII.

ous on section. It consists, under the microscope, of small round nucleated cells, imbedded in a delicate connective tissue stroma, which in parts is very deficient. The growth seems, therefore, to be a *glioma*. No history.

5. Glioma of the eyeball. The growth is the size of a hen's egg, and consists of a delicately reticulated connective tissue, the meshes of which enclose small, round, soft, nucleated cells. The development is seen to proceed from the sclerotic and fibrous sheath of the optic nerve. The lens and other intra-globular structures have become quite disorganised; the cornea is hazy and opaque.
6. "Malignant tumour of the left eyeball," removed by operation (extirpation of the globe), from a native child, aged about 18 months. It is said to have existed for one year. The growth forms a large, reddish (in fresh state), fungating tumour, which protruded upon the cheek between the eyelids. The latter were much retracted, but not infiltrated by, or fixed to the growth.

A longitudinal section through the extirpated eyeball shows great and complete disorganisation of all the structures within the globe. The optic nerve is small and atrophied. From its sheath a soft, irregularly-rounded mass is seen developing. It surrounds the posterior third of the shrunken globe, involving the loose cellular tissue and remains of the ocular muscles here situated. Growing inwards from the optic papilla and retina, there is also a small, pearly-white, slightly granular-looking nodule, the size of a hazelnut. It seems to have pushed the choroid coat before it, and to have encroached upon the vitreous chamber. The vitreous, lens, &c., are in a state of pulpy softening, with here and there calcareous particles infiltrating the same. The structure (microscopic) of the growth, both extra- and intra-globular, is identical. It consists of small, round, more or less uniform, nucleated cells, with a scanty and ill-defined, fibrillated, intercellular material, *i.e.*, a true *glioma*.

Presented by Professor H. Cayley.

7. "Malignant tumour of the left eyeball." This is a small, ill-defined growth occupying the posterior third of the globe of the eye, and intimately connected with the sheath of the optic nerve and sclerotic coat. It evidently has originated from the sheath of the optic nerve, which is thickened, and the nerve itself is considerably compressed and flattened. Growing from this situation the tumour-tissue infiltrates all the soft parts at the back of the globe, and thus forms an irregular-shaped mass the size of a walnut; one portion of which—close to the perforation of the sclerotic by the optic nerve—is abruptly rounded, and the size of a horse-bean. It also has a uniform dark-red colour (in fresh state), and is smooth, while the rest of the growth is whitish and granular-looking.

On microscopical examination, the structure of the tumour-mass consists of small, round, nucleated cells, about the size of leucocytes, lying close together, *i.e.*, with little or no intervening or intercellular tissue. Here and there the fragments of a few nerve filaments or of fibrous tissue may be seen intermingled with the cell proliferation. That portion which is of dark-red

colour is found diffusely infiltrated with red blood-cells, and therefore owes its tinge to this cause.

The tumour is the ordinary very common *glioma* of the eyeball. The latter is entirely disorganised, and contains now only some pulpy grumous-looking material, and small blood coagula.

History. The tumour commenced to grow about six or seven months ago," *i.e.*, prior to removal. "The symptoms noticed at this period were conjunctival irritation, soon followed by haziness of the cornea, and eventually total loss of vision in the affected eye. About the latter end of last month" (a fortnight ago), "the cornea suppurated and gave way, and a fungating mass protruded through the rent from the interior of the eyeball. On admission, the tumour was about the size of a large hen's egg. It occupied the whole socket, and protruded for about an inch and a half from it. It was firm to the feel, exceedingly painful, and highly vascular—so much so, that it bled at the slightest touch. The parents of the child (a native boy, aged 4 years) are healthy."

Presented by Professor H. Cayley.

8. "A tumour removed from the right eye of a Hindu male child, aged one year and eight months. It is said to have been of fifteen months' duration. About a month before the operation it burst through the cornea."

The tumour, with the extirpated globe, forms a softly lobulated mass, rather larger than a hen's egg. On longitudinal section, the eyeball is found much compressed and atrophied. The lens and vitreous partially calcified. The growth surrounds the posterior half of the sclerotic coat, from which, apparently, it has developed. It is very soft and brain-like in consistency and colour,—in parts is quite pulpy. The structure, under the microscope, is that of *glioma*—small, round, nucleated cells, heaped together in great abundance, and with very little intercellular tissue,—that which exists is either granular and amorphous, or only slightly fibrillated.

Presented by Professor H. Cayley.

9. A flattened, bilobulated tumour, with a deep sulcus between its component halves, in which the remains of a disorganised eyeball can still be distinguished anteriorly, and posteriorly a quantity of cellulo-adipose tissue, with the shreddy remnants of the ocular muscles, and the optic nerve. The growth appears to involve chiefly the eyelids; has originated, probably, in one or both of these appendages, and in its progress spread to the ocular conjunctiva and cellular tissue around the globe, compressing the latter and ultimately destroying it.

The proper structure of the tumour is soft and very friable, and exhibits, under the microscope, all the characters of true *epithelioma*. No history.

10. Enkephaloid carcinoma of the left eyeball. From a native male, aged 40. The tumour is said to be of only one month's growth. The whole of the eyeball, together with the upper and lower eyelids, have been extirpated. The growth forms a soft, yellowish or pinkish-white fungoid mass, protruding between the eyelids, to the posterior angles of which it is intimately adherent. The cornea has sloughed, and all the other structures

of the globe are seen, on section, to have become quite disorganised and unrecognisable,—a soft, yellowish, pulpy mass with here and there extravasations of blood in its midst—taking their place. The muscles of the eyeball are very soft and pale. The optic nerve is a little softened and swollen.

Sections of the tumour, examined microscopically, exhibit a cancerous structure. The cell-elements are large, epithelial and polymorphous; have one, two, or three large distinct nuclei, and are all considerably infiltrated with fat. In parts, the cells are pigmented (brown). The stroma is scanty, but characteristic. The blood-vessels large and numerous. The muscular fasciculi (of the ocular muscles) are pale, have almost entirely lost their transverse striæ. The nerve fibrillæ (of the optic nerve) are also granular and much broken up,—undergoing fatty metamorphosis.

Presented by Professor W. J. Palmer.

11. A small epitheliomatous growth affecting the ocular conjunctiva, lachrymal gland, and a portion of the upper eyelid of a native male patient, aged 60. The eyeball and diseased structures were removed together. The former shows some opacity of the cornea, which is partially overlapped (at its outer and upper margins) by prolongations from the morbid growth, spreading inwards along the ocular conjunctiva. The sclerotic is not affected. On bisecting the globe, the lens was found quite hard and white; the vitreous opaque; the other structures normal.

Sections from the ulcerated upper eyelid and from the growth surrounding the lachrymal gland exhibit, under the microscope, a very characteristic epitheliomatous structure, with also considerable small-celled infiltration of the muscular and other soft tissues involved by the growth in these situations.

Presented by Professor H. Cayley.

12. "Tumour situated in the left orbit, removed by operation from a native (Hindu) male aged 40. It is of about four years' duration."

This is an oval-shaped growth, about an inch and a half long and three-quarters of an inch broad, and has a distinct capsule of well-formed fibrous tissue. On section, it is seen to consist of two lobules,—one about twice the size of the other; the two united by loose connective tissue, and forming one tumour. On microscopic examination, the structure of the growth is found to be mostly fibroid. The fibrous tissue very delicate, nucleated, and closely interwoven. Here and there are seen glandular cells,—the remains no doubt of the lachrymal gland, in which the little growth (a *fibroma*) has originated. The smaller nodule is principally glandular, the larger fibroid. In the former the capillary vessels are large—presenting almost a cavernous arrangement.

Presented by Professor D. O'C. Raye.

13. A tumour of the orbit, with the extirpated (diseased) eyeball. The tumour is nodulated, and together with the extirpated globe forms a mass the size of a small orange. The eyeball is completely disorganised, flattened from before backwards,—reduced to a third of its normal size, and when laid open was found filled with dark grumous-looking fluid only. The sclerotic

is distinct, and appears to be thickened. The optic nerve is unaffected, except being perhaps a little compressed within its sheath. From the latter the morbid growth clearly originates, surrounds it, and is then continuous with the posterior two-thirds of the sclerotic. It has no capsule, but the shreddy remains of the ocular muscles, &c., are seen attached to the circumference of the growth, or partly imbedded in it. The tumour-substance is firm; on section has a yellowish-white, smooth, homogeneous appearance,—here and there stained pink.

Its structure, under the microscope, consists of fibro-cellular tissue, the cell elements predominating. They are, however, very small—more like nuclei, and the great majority are dotted, *i.e.*, granular from fatty metamorphosis. A few small capillary vessels are found distributed in the midst of this nuclear growth.

From the whole appearance of the tumour it seems to be of inflammatory origin—a kind of slow development of granulation-like tissue from the optic sheath and sclerotic coat, deriving firmness from a gradual transformation of portions into imperfectly-formed fibrous tissue, while, at the same time, many of the cell elements have atrophied and degenerated. The probabilities are strongly in favour of its being *gummatous*.

“The patient, a native male, aged 25, has been deaf from childhood, otherwise healthy. First noticed protrusion of the eyeball six weeks ago, and the tumour has gradually increased without pain. Curiously enough, an exactly similar growth is forming in the other orbit.” (Note by Dr. Cayley).

Presented by Professor H. Cayley.

14. A tumour of the orbit, about the size of a walnut, lobulated, and enveloped in a more or less distinct connective tissue capsule. It is surrounded by fatty and muscular tissue—the normal structures around the eyeball, matted together and fixed to the tumour. On section, it presents an opaque-white or faintly yellowish colour, and a glandular appearance. It is pretty firm in consistency and moderately juicy.

Microscopically examined, the structure is found to be almost purely glandular—consisting of dense masses of small round lymphoid cells, contained in a small-meshed reticulum of connective tissue. Towards the periphery, nerve filaments and muscular fasciculi can be detected—incidentally involved in the growth, but the proper tumour-tissue is clearly *lymphoid*, and sparingly vascular.

The tumour is a *simple lymphoma*, and has originated, probably, in the lachrymal gland. “One lobe of the mass did project from the upper and outer part of the orbit, and seemed to belong to the lachrymal gland, but another was prominent below and to the inner side of the eyeball, and the bulk of the tumour surrounded and was intimately connected with the optic nerve. The eyeball was not diseased, but very prominent.” (*Note received subsequently from Dr. Cayley*). *Presented by* Professor H. Cayley.

15. Eyeball extirpated on account of a corneal growth, which, having been removed (“a few months back”) when quite small, recurred, and had increased rapidly. The growth is a soft *warty-looking* mass covering the greater part of the cornea, and a considerable portion of the adjacent sclerotic on one side. It is raised from

two to four lines above this surface; presents a dull opaque-white colour, and is entirely confined to the parts indicated, not penetrating eyeball. The portion of cornea remaining uncovered is about the size of a split-pea, is brownish, thickened, and leathery. The sclerotic, choroid, and retina present nothing abnormal, but the lens is quite opaque and hard.

Examined microscopically, the little growth is found to consist of papillary tufts composed of rounded and flattened epithelial cells, lying very close together, and only here and there separated by a little very delicate connective tissue. The flattened cells are situated superficially, the rounder cells more deeply, and all are more or less distinctly nucleated. Quite at the base of the growth small cells or nuclei are found—probably young or germinating epithelium, and the appearance is, therefore, as if the growth had originated in the ocular conjunctiva on one side of the cornea, and had gradually spread over and involved the superficial lamina of the latter. There are no “nests,” and no great diversity in the shape and size of the epithelial cells composing the growth, which, therefore, is probably simply *papillomatous*, not *carcinomatous*, in character.

The primary growth removed was situated at the outer canthus of the (right) eye;—was a fleshy-looking body about the size of a pea, and had existed for eighteen months.

Presented by Professor H. Cayley.

16. A sebaceous cyst, the size of a pigeon's egg, “removed from under the skin of the right eyebrow of a native lad aged 16.” It has a firm, well-formed, connective tissue cyst-wall, and the contents are purely sebaceous,—consisting (under the microscope) of much fat, and large numbers of flattened, withered, and variously distorted epithelial cells; also a few small hairs,—like those of the eyebrow. These contents have a characteristic opaque, yellowish-white, putty-like appearance and consistency.

Presented by Dr. E. Lawrie.

17. A similar cyst, the size of a walnut, removed from beneath the skin of the left upper eyelid of a native male, aged 25, an out-patient. *Presented by Dr. E. Lawrie.*

18. “Abscess of the left parotid gland, which communicated with the meatus auditorius externus.” (Ewart.) No history.

The suppurative process seems to have extended into the tympanum and internal ear, and to have excited basal meningitis. The dura mater investing the petrous portion of the temporal bone, in the neighbourhood of the internal auditory canal, is abnormally thickened and opaque, and coated by a thin layer of soft granular-looking material, which, examined microscopically, consists of recent exudation-matter or lymph.

19. Two small fibrous tumours—one the size of a pea, the other of a hazelnut. They were both slightly pendulous, and growing from the lobes of the ears of a young European sailor.

Presented by Dr. J. Ewart.

20. Two fibroid tumours removed from the lobules of the ears of a native male (Hindu) aged 25. The quadrilateral-shaped tumour belongs to the right ear, the triangular shaped one to the left. “Similar (but not quite so large) tumours first developed six years ago, in the lobes of the ears, in the situations where they

had been pierced for ornaments, after the holes thus produced were allowed to close. They were removed after 18 months' growth; reappeared after six months, and were again removed; reappeared for a second time *in situ* after an interval of two months," and the specimens now exhibited represent the growth of two years, removed for the third time.

The remarkable recurrence of these growths *in situ* after removal by operation is in accordance with the observations of Paget* and others, and affords a good illustration of the fact that, occasionally, certain simple tumours as these (consisting only of white fibrous tissue and a few elastic filaments—on microscopic examination) may recur *in situ* without any element of malignancy in either structure or history.—J. F. P. McC.

Presented by Dr. Dickson, Civil Surgeon, Dhurmsala.

21. A tumour (fibroma) "removed from the back of the left ear. It grew, apparently, from the cartilage, and recurred two years after the first operation."

This is a rounded growth, the size of a walnut, with a portion of the skin attached. On section, it is yellowish-white, firm, and decidedly fibrous-looking,—the arrangement of the fibrillæ being mostly concentric. Under the microscope, it is seen to consist of well-developed white fibrous tissue, pretty freely supplied with blood-vessels. Its connection with the skin is most intimate and inseparable. It contains no cartilaginous elements.

Presented by Dr. E. Lawrie.

22. An irregularly oval-shaped tumour, the size of two fists, removed from the left side of the face and neck of a native male patient, aged 52. "It is said to have originated in the lobule of the ear." The tumour is markedly lobulated at the surface, and possesses a delicate yet distinct capsule of fibrous tissue, which can be peeled off with a little care, and is only wanting where the growth has ulcerated through the superjacent skin. On section, the tumour tissue is opaque and slightly yellowish, firm but elastic in consistency. The structure consists, under the microscope, of chiefly fibroid cartilage—the intercellular (fibrous) tissue and cell elements both well marked,—the latter, apparently, in a state of rapid division and multiplication. Here and there, however, are small masses or collections of round, granular, soft, nucleated cells,—not cartilaginous; these are heaped closely together, and have no formed intercellular material—in fact, possess all the characters of small, round-celled sarcoma. The tumour is probably, therefore, a mixed one, *i.e.*, an *enchondro-sarcoma*.

Presented by Professor D. O'C. Raye.

23. A small, flattened, nasal polypus, having a short thick pedicle, about a quarter of an inch in length. The growth has a yellowish-white colour and firm consistency. It is composed of delicate, closely-woven, white fibrous tissue, abundantly nucleated.
24. A fibroid polypus "removed from the antrum Highmorii." The growth is about the size of a walnut; irregularly lobulated;

* Lectures on Surgical Pathology, 1863, p. 485.

firm and fibrous-looking on section. Under the microscope, the general structure consists of compact, firm, white fibrous (connective) tissue, containing, also, elastic filaments. Here and there are scattered, irregularly, small circumscribed spots of mucoid softening, affecting evidently the remains of glandular follicles included in the polypus.

Presented by Professor J. Fayrer.

25. "Large fibrous tumour, springing apparently from the body of the sphenoid, and occupying both nares, the spheno-maxillary and right pterygoid and temporal fossæ. A large lobe of the tumour, marked now by two pins, lay within the cavity of the skull, (separated from the brain by the dura mater), having by its pressure led to absorption of the greater part of the body and right wing of the sphenoid, and of part of the basilar and left petrous bone. This part of the tumour was only removed after death, as was also the adjacent lobe (transfixed by one pin) which occupied the left naris, between the outer wall and mucous membrane, shreds of which are still attached to it. The portion of the growth occupying the right nasal fossa protruded from the nostril; that which occupied the temporal fossa has some muscular fibres still adherent to it. The tumour when removed weighed 7 ozs., and had been growing for about five years. The patient, a Musulman lad, aged 14, died three hours after the operation. The tumour consists entirely of dense white fibrous tissue." (Colles). *See further, Indian Medical Gazette*, July 1866, pp. 181-82. *Presented by* Dr. W. B. Beatson, Superintendent, Mitford Hospital, Dacca.
26. A gelatinous polypus of the nose. It has a soft, gummy consistency, and brownish-yellow colour. The pedicle is short and slender. The structure is myxomatous,—consisting of a flickering hyaline basis substance, infiltrated with round, angular, and stellate connective tissue corpuscles, which are nucleated, and also exhibit mucoid changes. *Presented by* Professor J. Fayrer.
27. A gelatinous or mucous polypus nasi. A small, flattened, short-pedicated growth, consisting (under the microscope) of very fine fibro-elastic tissue, loose and lax towards the central parts, infiltrated with mucoid and fatty material, and here and there exhibiting a few hypertrophied mucous glands or follicles. *Presented by* Dr. R. H. Stevens.
28. A small polypus of the nose, having a slender short pedicle. Its external surface has a pitted or honeycombed appearance from a peculiar disposition of the most superficial or epithelial layer. The deeper structure is firm, brownish, and fibrous-looking. Sections from the growth show, under the microscope, a fibro-myxomatous structure, consisting of much delicately reticulated connective tissue, with round and oval cells imbedded in the same, and both infiltrated sparingly with glistening opalescent material. The blood vessels are small and not numerous.
29. A fibro-myxomatous polypus, the size of an orange, which developed from the soft palate near the posterior nares, filled the back part of the mouth, and extended backwards into the

fauces and pharynx, interfering thus very considerably with both deglutition and respiration. The growth has a short but distinct pedicle, and a broadly lobulated outline. It was easily removed by the *écraseur*. The surface of the polypus is invested by thickened mucous membrane. On section it has a pearly-white fibrous appearance and somewhat succulent consistency.

Microscopically examined, consists of well-formed, closely-meshed, and abundantly nucleated fibrous or connective tissue, with numerous blood-vessels and highly-developed tubular gland-structures,—all of which are best marked in the superficial portions, *i.e.*, just beneath the mucous membrane. More deeply, the structure becomes looser and laxer, and is largely infiltrated with mucoid material, but otherwise presents no abnormal growth.

From a Mahomedan lad, aged 16. It is said to have been of only four months' duration. *Presented by* Professor K. McLeod.

30. A firm, oval-shaped, but flattened polypus nasi, with a greatly elongated pedicle. It is of dull white colour; the surface slightly pitted. On microscopic examination, the structure is found homologous with that of the mucous lining of the nares, and consists of an hypertrophied condition of the epithelial layer, the sub-epithelial connective tissue, and the muciparous gland-structures of the same: these last, in particular, are largely developed; their acini enlarged, full of proliferating gland-epithelium; their ducts elongated and tortuous. The growth may therefore be regarded an *adenomatous* variety of nasal polypus.

31. A large glandular polypus, removed from the posterior nares of a European sailor, aged about 24 years. It projected into the pharynx to so great an extent as to interfere materially with respiration and deglutition. "It had been growing for some months, but no inconvenience was experienced until it began to hang over the pharynx."

This is a pyriform tumour, two and a half inches in length, an inch and a half broad, and at the base about an inch in thickness.

On microscopical examination, the structure of the growth is seen to consist of a series of acini and tubules (the normal gland-structures of the post-faucial region) hypertrophied, and separated by moderately wide meshes of a delicate connective tissue, among the fibrillæ of which small, round, lymphoid cells are observed. The polypus is, therefore, an *adenomatous* growth.

Presented by Dr. J. Ewart.

32. A portion of the frontal bone, with (1) a circumscribed, almost completely ossified *nodule*, just above the right supraorbital arch; and, (2) a large tumour, which has perforated the cranium through the right orbital plate, and filled the greater part of the right nostril. The latter growth is smooth, and invested by a delicate, but distinct fibrous capsule, where it projects into the nares. It is pulpy and broken up (flocculent) within the cranium. The consistency is throughout soft.

On microscopical examination, the structure consists of fibro-nucleated tissue. This assumes here and there, a distinctly nodular character; in other parts has no

specific arrangement. In the former case, the disposition is very characteristically *gummatous*. Small depôts are found composed of opaque, granular, amorphous material, surrounded by imperfectly formed connective tissue and blood-vessels, and these, in turn, by more perfect fibro-elastic tissue. The blood-vessels show a very remarkable thickening of their walls, with diminution of the lumen or calibre. There is no other cellular or morbid infiltration. The growth seems to be truly *syphilitic* or *gummatous*.

From a native male (Mahomedan), aged 50, who died in hospital of acute dysentery. (See further, "Medical *Post-mortem* Records," vol. III, 1880, pp. 713-14.)

33. Small-celled, spindle-celled sarcoma, forming a semi-polypoid growth which was "removed from the left side of the septum nasi of a woman aged 30." The tumour is slightly lobulated, and invested by a thin capsule of delicate connective tissue. It is very soft in consistency, homogeneous and yellowish-white in appearance. It consists of small, nucleated, spindle-shaped cells, and a few also round or oval. There is no intercellular substance, and no formed stroma.

Presented by Professor J. Fayrer.

34. A portion of skin from the shoulder of a native *palki-bearer*, showing very considerable hypertrophy, the result of intermittent pressure caused by the manner in which this conveyance is borne on the shoulders.

35. "The great and little toes of the right foot, preserved to show the formation of hard corns with adventitious bursæ over prominent points of bone. The hypertrophied skin has been raised from the metacarpo-phalangeal joint of the great toe, so as to show the bursa lying between the corn and the joint. The corns on the little toe have been divided down the centre, and their halves held apart, so as to expose the cavities of the bursæ." (Colles.) *Presented by* Professor J. A. P. Colles.

36. Portions of skin from two cases of "acute œdema" (pseudo beri-beri), prevailing in an epidemic form in the southern and south-eastern portions of the city and suburbs (March 1880).

The two smaller fragments are from one case, the two larger from the other. Both show considerable solidity and brownish-red discolouration.

On microscopical examination, no change is found in the epidermis or papillary layer of the cutis vera; no abnormal or defective pigmentation. The meshes of the cutis below the papillary layer appear larger, frayed out, and partially broken down. There is no marked alteration in the hair follicles, sweat, or sebaceous glands. The adipose tissue is abundant and of reddish-brown colour. This is due in parts to blood *staining*, in others to actual *extravasation*—blood corpuscles being recognised in abundance in the fibrous septa between adjacent fat lobules, and even between the fat cells. It seems probable, therefore, that the peculiar induration of the skin and subcutaneous tissues, so characteristic of this disease, is due to extravasated blood in the latter situation,—the fibrin solidifying in the deeper cuticular strata, while the more peripheral are widened out, and, as it were, rarefied by the serous effusion; both thus producing "*solid œdema*" of the affected parts. Portions of the liver in each case, examined at the same time, exhibited very marked peri-lobular fatty infiltration of the hepatic cells and interlobular tissue. The epithelial lining of the kidney-tubules was swollen and granular ("cloudy swelling"), but there was nothing else

remarkable in the structure of the renal organs. In one case the heart showed very advanced fatty metamorphosis of the muscular fasciculi.

37. Three portions of skin,—the two larger taken from the inner and front part of each thigh, the smaller piece from the right mammary and axillary region. They all exhibit intense pigmentation of a coppery tinge (bronzing). Similar eutaneous discolouration, in patches, was distributed throughout the body, and was especially marked in the face and flexures of the joints.—From a native male patient, a Hindu, aged 40, who showed symptoms of *morbus Addisonii*, and ultimately died from ascites associated with cirrhosis of the liver.

The supra-renal bodies in this case were found on *post mortem* examination much atrophied, and showed considerable density and hardness from fibroid thickening of their capsules and proper (gland) parenchyma.

38. Portions of skin taken from the dorsal aspects of the fore-arms, exhibiting large purplish blotches, and also small punctiform blood extravasations into the cutis vera.* From a case of scorbutus or scurvy,—an English seaman, aged 62. The skin of the feet and legs showed similar changes. The patient was admitted into hospital in a very low and prostrated condition, suffering from dysentery, and the immediate cause of death was hæmorrhagic meningitis (cerebral). (See further, "*Post-mortem Records*," vol. I, 1874, pp. 471-72.)
39. Portions of "tattooed" skin from the arm of a European sailor who died of cholera. The designs represent (a) the crucifixion, (b) a ship in full sail, (c) an anchor with a scroll above it bearing the word "Hope."
40. A similar specimen.—The pigment is blue, probably gunpowder.
41. Portions of "tattooed" skin from the fore-arm and thigh of an aboriginal New Zealander (Maori), a seaman, aged 25, who died in hospital. The artificial dark blue pigmentation (probably from gunpowder) contrasts markedly with the bronzed condition of the natural skin.
42. 43. Two specimens of "tattooed" skin from the arms of British seamen. The colouring is rich and brilliant, both blue and red. Probably gunpowder and cinnabar were employed.
44. Acute inflammation and ulceration of a portion of the skin of a thickened and elephantoid scrotum. The ulcer is rather larger than a rupee (florin), and has a very irregular, raw, somewhat fungating appearance. After removal of the scrotum by the usual operation, the patient (a Chinese, aged 25) recovered completely.
45. "Sloughing ulcer in an elephantoid leg. Amputation, recovery. Patient was 60 years old. This is a good example of inflammation occurring during one of the repeated paroxysms of elephantoid fever, passing rapidly into extensive sloughing and destruction of the soft parts." (Ewart.)

* The appearance of parts has been much altered by long maceration in spirit.

46. Rodent ulcer, affecting the skin and subcutaneous tissues of the left mamma. The subject was a native female, aged about 40. "The disease is said to be of five months' standing." The ulcer is about the size of the palm of the hand; has abrupt, thickened, slightly tuberculated margins; the centre is deeply excavated. In sections made through its whole thickness, the subcutaneous tissues are found condensed and firm. Very little of the glandular structure of the mamma is seen, the ulcer having involved the skin, &c., on only one side of the gland; it has, however, reached the subjacent pectoral muscles.

Examined microscopically, sections show (1) little or no alteration of the epidermal layer of the skin; (2) an expansion of the cutis vera,—the cell elements of which are in a state of rapid proliferation, and contemporaneous disintegration. (3) In the subcutaneous structure, the white fibro-elastic tissue is hypertrophied, forming dense filamentous bands interlacing with each other in all directions, and, distributed along and between the fibrous bands, are large numbers of small, irregular-outlined, nucleated cells and free nuclei. (4) Here and there sections of gland-ducts—compressed and filled with atrophic and degenerate epithelium—are found. (5) In the deeper layers, largely developed blood-vessels are met with. The general morbid histology precludes epithelioma, and points more closely to lupus or rodent ulceration.

Presented by Professor W. J. Palmer.

47. "Aihnum" or specific ulceration of the little toe. From a native adult (male). From the section which has been made it will be seen that the terminal phalanx of the toe remains entire, and the ball of the toe is formed by dense white fibrous tissue, holding in its meshes a large quantity of granular fat. The articulation between the terminal and middle phalanges is normal,—the encrusting cartilage quite healthy. Of the middle phalanx only the distal half remains, the rest has been converted into fibro-adipose tissue, and is constricted posteriorly to form a kind of pedicle, by which it was attached to the proximal phalanx of the toe, and from which, at this spot, it was becoming gradually detached by a slow ulcerative process. The skin is considerably thickened over the whole of this little "tumour." *Presented by Dr. A. Crombie.*

48. Preparation illustrative of the condition known as "aihnum." This, the little toe, "was almost spontaneously amputated across the first phalanx. The groove extended to three-fourths the depth of the toe." From a native male patient. "The pain disabled him from work. The first phalangeal bone is completely converted into thick fibrous tissue surmounted by a cartilaginous shell, representing its articular surface." A similar fatty and fibroid degeneration affects the bony tissue of the middle and terminal phalanges, but the articular cartilage between these phalanges still persists, and the joint seems to be healthy.—*Presented by Dr. Gopaul Chunder Roy, Beerbhoom.*

49. Hypertrophied and superficially ulcerated great toe, amputated at the metatarso-phalangeal articulation. The toe is large and bulbous, three times its natural size. The surface is raw-looking,—covered by numerous small papules and ulcers; the nail

is atrophoid, and has almost disappeared. On longitudinal section the phalangeal articulation is found healthy, but surrounding the terminal phalanx is a fibrous-looking growth, which, under the microscope, consists of fibro-elastic tissue plentifully infiltrated with small nuclei and germs, yet showing no differentiation into formed structure, *i.e.*, a kind of nuclear infiltration of the overgrown natural tissues of the part.

The patient, a native male, aged 25, stated that "four months ago spontaneous ulceration of the integument occurred over the root of the nail; it extended to the tip of the toe and beneath the nail, which has since been almost destroyed.

He had chancre about five years ago, for which he was salivated."

The disease evidently consists of syphilitic infiltration and ulceration of the nail and soft parts forming the ball of the toe—a severe variety, apparently, of *syphilitic onychia*.

Presented by Dr. Herbert Baillie.

50. "Gangrene of the left foot. The skin of the dorsum and sole is as black as pitch. About the line of demarcation the integument is destroyed by ulceration exposing the mortified part below." (Ewart.) This line extends in front across the ankle joint, and posteriorly is directed obliquely upwards about three inches above the heel. No history.
51. "Gangrene of the right foot of a native child, aged five years, from embolism, during an attack of remittent fever of sixteen days' standing. Bullæ are seen on the dorsum and sole of the foot." (Ewart.) *Presented by* Assistant Surgeon C. Bysack.
52. A preparation showing a series of toes which have separated spontaneously after gangrene.
53. "Dry gangrene of the right foot and lower half of the leg after fever, and due to embolism of the tibial arteries. The limb was amputated after the line of demarcation had formed. The subject was a native male (Hindu)." (Colles.)
54. "Spontaneous gangrene of the left foot, embracing all the toes. Amputation by Chopart's operation. From a native male, aged 25." (Ewart.) The great toe alone remains, and the line of demarcation between it and the metatarsus is well seen. The other toes appear to have dropped off, or were removed during the operation. *Presented by* Professor J. Fayrer.
55. "The two hands of a Portuguese sailor illustrating dry gangrene caused about three months ago by frost bite. Amputation at the wrist-joints was performed." (Ewart.)
Presented by Professor S. B. Partridge.
56. "Both feet of a native female patient, (Hindu), aged 25, separated through the ankle-joints from dry gangrene, coming on after fever. Fever began three months and the gangrene one month ago." (Colles.)
57. Extensive gangrenous disorganization of the soft parts surrounding the left wrist and hand of an old and debilitated Hindu (aged 50) who, seven months previously, had a "moxa" applied to the inner side of the palmar aspect of the wrist "for the cure of an enlarged spleen." The ulcer thus produced, never healed, partly

owing to its depth, but chiefly, probably, from the constitutional debility of the patient, and on account of his having undergone, subsequent to its formation, a mercurial course "for gonorrhœa." On the anterior aspect of the wrist and hand the flexor tendons are exposed and partially destroyed,—the ulcerative process has extended in depth as well as in breadth. On the posterior aspect of these parts are three other large ulcers. As there was no evidence of any reparative change even after two months' careful treatment in hospital, the hand was amputated two inches above the wrist-joint.

Presented by Professor S. B. Partridge.

58. Spontaneous dry gangrene of the left foot, the result of calcareous degeneration of the arteries. The patient, a native male, aged 25, of intemperate habits, was, three years previously, admitted into hospital with a similar condition (dry gangrene) of the right foot, for which the leg was amputated. He has remained well since. The present disease commenced (according to him) only fifteen days ago,—a small sloughing ulcer appearing spontaneously on the plantar aspect of the great toe, and spreading gradually so as to involve the whole foot.

The posterior tibial artery has been dissected out and laid open. It was found pervious as far as behind the inner malleolus, but greatly shrunk, and so also were the accompanying veins. The arterial coats are rigid and partially calcareous.

The femoral artery, on this side, from below the profunda, was rigid, irregularly calcified (*i.e.*, at intervals), and contracted to the size of an ordinary radial. In the popliteal space it was completely occluded. The right knee-joint was dry and mummified. (*See prep. No. 50, Series III.*)

("Surgical *Post-mortem* Records," vol. I, 1874, pp. 81-82.)

59. "A club-foot, the result of extreme contraction of the cicatrix of an extensive and deep burn over the instep and inferior part of the anterior aspect of the leg, sustained many years prior to death. The dorsum of the foot is drawn up by the contracted cicatrix, and firmly opposed to the front part of the lower leg, so that the patient must have only impressed the heel upon the ground during locomotion. The new tissue is dense and unyielding." (Ewart.)

60. A preparation showing the results of a severe burn inflicted upon the right upper extremity during infancy, with the somewhat V-shaped and web-like cicatrix between the fore-arm and arm, drawing them closely and almost immovably together.

The patient, a native boy, aged 14, died in hospital from pulmonary phthisis. He was burnt, accidentally, four days after birth.

The wrist-joint and fingers have coalesced to form a rounded shapeless mass, the size of an orange. Only a rudimentary thumb can be distinguished.

61. A portion of skin from one of the fore-arms of a native male patient, showing a circular depressed cicatrix, nearly as large as a rupee (florin), produced by the application of the "moxa,"—a very common practice among natives for the relief (?) of various diseases, *e.g.*, hypertrophy of the spleen, elephantiasis, &c.

62. A portion of skin from the palm of the left hand, showing two linear cicatrices, each about a quarter of an inch in length, the results of bites (healed) from a rabid bitch. The cellulo-adipose tissue beneath each is somewhat condensed and firm, and a few filaments from the median nerve can be traced into the same.

The subject was a native male (Hindu), aged 25, who became hydrophobic five weeks after the bite, and died in hospital.

On dissecting and examining the nervous filaments alluded to, nothing specially morbid could be detected in their structure. Considerable irritation of the cutis vera and subcutaneous tissues is, however, evidenced under the microscope, viz., a proliferation of the small round cells of the former, with an extension downwards of a small-celled growth into the subcutaneous tissues from the bases of the papillæ. (See further, "*Medical Post-mortem Records*," vol. I, 1876, pp. 995-96).

63. A large warty growth, with a flattened base about the size of the palm of the hand, and a highly papillated surface. The projecting papillæ are almost horny in character, and, near their peripheral extremities, darkly pigmented.

The structure, microscopically, shows enormous development of the epithelial layer of the skin (and chiefly of the epidermis), but no other marked change. *Presented by* Professor S. B. Partridge.

64. Tumours from the left clavicle and right fore-arm of a girl of 10, removed by operation. They present "cauliflower growths on their cutaneous surfaces. Similar tumours existed on the right side of the abdominal wall, and the conjunctiva at the edge of the left upper eyelid; and others were situated below the left nipple, and over the right scapula. The tumour on the fore-arm was the oldest, and had existed for seven years."

These appear to be warty growths. Under the microscope, the deeper layers of the cutis are seen to be hypertrophied,—bands of white fibrous tissue with elastic filaments and nuclei forming a dense interlacement, while the superficial layers with the epidermis are developed into warty papillomatous outgrowths.

Presented by Dr. E. C. Bensley, Civil Surgeon, Midnapore.

65. Large warty growths, of six months' duration, which involved the skin of the whole perineum, and formed a circular fringe round the anus. The growths are lobulated as well as being divided into minute warty excrescences.

Under the microscope, the epithelial proliferation is most marked, especially that of the papillary layer of the cutis. Each little warty outgrowth is composed of a series of very highly hypertrophied papillæ; towards the central portions of which no epithelium exists, but is replaced by a nucleated connective tissue, and delicate looped capillaries.

From a native female, aged 28. "She denied having suffered from syphilis." *Presented by* Professor Gayer.

66. A peculiar diffuse, warty, or papillated condition of the skin of the palm of the hand, and of the phalangeal flexures of the fingers, associated with leucodermic patches of irregular outline and dead-white colour. Each papule is darker than the skin on which it is situated, is raised and hard; and, where several are grouped together, a more markedly warty appearance is

produced. The right hand was similarly affected.

Obtained *post-mortem* from a native male, aged 45.

67. A warty growth, rather larger than the palm of the hand, removed by operation. It involved the skin on the anterior and upper part of the right leg. (From a Hindu female, aged about 50). "A small warty excrescence had existed at this part for several (more than thirty) years. Three months ago she scratched it and made it bleed, after which the growth ulcerated, spread, and became irritable and painful. The popliteal and inguinal glands on the right side were enlarged and indurated."

The growth is ulcerated and partially cicatrised towards the centre; raised, nodulated, and tuberos towards the periphery. It appears to be entirely dermal in structure,—consisting of a series of closely-packed warty developments of an opaque-white or yellowish colour. The subcutaneous adipose tissue is thick, but apparently uninfiltated, and the superficial fascia of the leg (which has been removed with the tumour) is quite healthy-looking.

This is confirmed on microscopical examination,—sections taken from the growth exhibiting a proliferous epithelial structure to a certain depth only,—no prolongations into the deeper subcutaneous tissues,—and a basis-substance or matrix of delicate, nucleated connective tissue with numerous capillary blood vessels. The tumour is not epitheliomatous, but warty in character.

Presented by Professor K. McLeod.

68. A very interesting specimen, showing the recurrence(?) of an epithelial cancer in the cicatrix remaining from the removal of a similar(?) growth. The patient was a young native female. Eight months prior to her admission into hospital, a growth, said to be "as large as a pomegranate," was removed from the "posterior aspect of the right gluteal region, by an Assistant Surgeon." When admitted, the cicatrix was occupied, at one extremity, by a circular, slightly raised ulcer, with hard, eroded edges; at the other, by a prominent horn-like growth. The entire cicatrix with a portion of the surrounding healthy skin was now removed,—as seen in the preparation. Under the microscope, the ulcerated mass is found to possess all the characters of true epithelioma (cancer), while the horn-like growth is built up of a series of brownish, slender, perpendicular columns, closely massed together, and consisting of dry, shrivelled, epithelial cells, angular, distorted, and generally irregular in shape, almost perfectly transparent, and for the most part without nuclei, *i.e.*, a simple non-cancerous growth.

The interest attaches to the peculiarity of the development of a truly infiltrating epithelial (cancerous) growth at one end of the cicatrix, and a non-cancerous, non-infiltrating, but still epithelial (horny) development at the other.—J. F. P. McC.

Presented by Professor H. C. Cutcliffe.

69. "Keloid-looking growths, of about four months' duration, removed from the leg of a native out-patient, aged about 40."

These are flattened warty or horny-looking growths from the skin on the outer aspects of both legs. The integument here had a contracted, cicatricial-like appearance,—said to be the result of a severe burn.

Examined minutely, the surface of each little growth is soft and creamy, breaking down under pressure of the fingers into a sabulous paste. Under the microscope, the chief change appears to have taken place in the papillary layer of the cutis. The epidermis is moderately hypertrophied. The papillæ of the skin are greatly developed,—secondary and tertiary papillary layers being here observed, the epithelial structure of which is well marked, and so abundant as to form “nests” (as in true epithelioma), but does not descend into or penetrate the subcuticular tissues. The latter are normal, with the exception that the hair-shafts and bulbs are compressed and atrophied, and the sebaceous glands are dilated into cyst-like cavities with fatty and degenerate epithelial contents.

The structure of these little growths is therefore quite unlike “keloid,” and has closer analogies to horny or warty cutaneous developments. *Presented by Dr. E. Lawrie.*

70. “A keloid growth removed from the middle sternal region of a young European sailor. It had developed here in connection with an old cicatrix.” (Ewart.)

71. A subcutaneous fibroma, removed from the forehead of a native male, aged 34,—an out-patient. The growth is the size of a small orange; has a well marked capsule of connective tissue, strongly adherent to the skin on the anterior aspect. It is firm and elastic on section, smooth and homogeneous, and of a milky-white colour. Consists (microscopically) of delicate connective or fibrous tissue, the fibrillæ of which interlace very closely and compactly. Many elastic tissue wavy filaments are also included in the structure of the growth. The blood vessels are moderately large and abundant. *Presented by Dr. E. Lawrie.*

72. A portion of a very large tumour, which involved the skin and subcutaneous tissues of the buttocks and lower part of the spine, &c. The subject was a native male, aged 22. He stated that “there was a congenital nodular thickening of the skin on the right side of the sacrum, which has slowly and gradually increased, and is still progressing.”

The portion removed and preserved is a mass the size of the foetal head or a little larger. The skin is intimately adherent to the morbid growth, and is stained of a very black colour,—as if from nitrate of silver. This pigmentation, however, is natural, not artificial, and contrasted strongly with the light-brown colour of the skin over the rest of the body.

The growth is lobulated, and on section a series of rounded, firm, nodular tumours are observed, varying in size from a walnut to a pea. These are all situated beneath the skin, in the loose fibro-cellular tissue of the part. Examined more closely they present a fibroid appearance; the fibrous tissue is very delicate but firm, and has a distinctly concentric arrangement. The cut surface

has a pearly-white lustre. Some of the nodules show central softening and caseation ; each has a well-formed capsule of fibrous tissue, from which it can be easily shelled out.

Examined microscopically, the fibroid character of these growths is confirmed. Each little tumour is composed of white fibrous tissue, with here and there a few elastic filaments. The fasciculi of this fibrous tissue are closely interwoven, and have a well-marked concentric or laminated arrangement. Thickly distributed amidst this tissue, and enclosed in the small spaces left by the intersections of its fibrillæ, are large numbers of small round cells or nuclei—about the size of ordinary lymphoid or gland cells. These are, in parts, aggregated to form small depôts, and show incipient fatty softening and caseation. The fibroid tumours described do not lie very closely together, but are separated by a considerable quantity of loose connective tissue, which is soft and flickering in parts from mucoid infiltration. Blood vessels are large and numerous in this tissue, and the vascular supply of the independent nodules—distributed chiefly along their capsules—is also abundant.

The whole mass consists of (a portion of) a pendulous outgrowth of the skin of the parts specified, and implies an hypertrophied condition of the subcutaneous structures, including, probably, the cutaneous glands and hair follicles. It may be regarded therefore as a somewhat unusual form of what is known as *molluscum fibrosum*,—the growth being composed of a mass of conglomerate (though individually distinct) fibroid tumours, instead of separate and distinct pediculated outgrowths.

Presented by Professor Gayer.

73. *Molluscum fibrosum*. A pendulous fibroid growth, removed from the left gluteal region of a native female, aged 22. "Her body is covered with small similar growths,—said to be congenital."

The preparation exhibits one of these cutaneous outgrowths, the size of an orange, and slightly lobulated. On section, it is seen to be directly continuous with the cutis vera, and to be densely fibroid in appearance. Has a pale waxy colour, and cuts with difficulty.

Under the microscope, the structure consists of nucleated white fibrous tissue, the filaments of which are arranged, for the most part, concentrically, and thus form a series of rounded nodules closely bound together by similar tissue. At the centre of each such laminated nodule the cross-sections of two or more small capillary vessels are observed. In parts, the tumour-substance is soft and gelatinous from mucoid changes. There is no capsule.

Presented by Professor D. O'C. Raye.

74. A fatty tumour about the size of a melon, and more or less rounded in outline, removed from the interseapular region of a native male, aged 36. The tumour weighs 36 ounces, and was the growth of twelve years. At the centre there is a large cavity, the result of suppuration and breaking down of the substance of the tumour in consequence of inflammatory changes, which followed upon the application of the "moxa" by a native "*hakim*." The skin at this part is very intimately adherent to the surface of the tumour, and presents an ulcerated

and partially cicatrised condition. The tumour tissue is purely fatty (lipoma.) *Presented by* Professor Gayr.

75. A small polypoid fatty tumour (lipoma) found attached to the inner side of the left thigh of a native female, aged 23, who died from cholera. It was removed *post mortem*. The pedicle is three-fourths of an inch in length and half an inch thick. The superjacent skin is closely and inseparably connected with the growth.

76. Elephantiasis arabum (*buenemia tropica*) of the right foot and leg,—a growth of four years' duration.

"At first it was accompanied by fever, recurring at regular intervals during every full moon. During the last two years it has increased rapidly. From the consequent over-distension of some parts, the swelling began to give way at several points, leading to the formation of ulcers of varying shapes and sizes. These healed up spontaneously, and they were succeeded by fresh crops, which underwent a similar cycle of changes. Hence the ulcers were of variable duration, some having existed longer than others. About two inches below the knee the swelling commenced, extending to and including the whole of the foot and toes."

"At its greatest circumference the leg measures 12 inches. The girth of the foot is about 15 inches. The tissues are hard and unyielding. There are numerous irregular elevations and depressions, cicatrices of healed-up ulcers, and fresh ulcerations. The existing ulcers are five in number. The largest is situated on the external aspect of the leg, about two inches above the ankle. It is surrounded by an irregular thickened margin, and gave exit to a thin yellowish matter. Three ulcers are placed above this large one, and have nearly cicatrized. There is a large ulcer on the *dorsum pedis*, surrounded by indurated, thick, and irregular margins. It reaches from the inner side of the foot to about an inch from the outer margin. It is superficial in some parts, at others it penetrates even to the bones by fistulous communication." (Allan Webb).

77. Elephantoid hypertrophy of the right foot and ankle. The leg was similarly affected to within four inches of the knee-joint, at which spot amputation was performed. The skin of the parts preserved presents a very characteristic tuberos, nodulated, and greatly thickened appearance. The subcutaneous cellular tissue is enormously developed, and, in the recent state, was charged with much pale, limpid serum, which exuded also during life from small ulcerations on the dorsum of the foot. The muscles are pale and flabby; the bones of the foot soft, and abnormally fatty. *Presented by* Professor J. Fayrer.

78. A scirrhus tumour, about the size of an orange, which involved the skin and mucous membrane over the left side of the face, extended inwards to the palate, and backwards to the pterygoid process of the sphenoid bone. It was removed from a native male patient, aged 60, who had enjoyed good health up to the commencement of the growth, *i.e.*, about three and a half months prior to the operation.

"He attributed the development of the tumour to a bruise or contusion from the horn of a cow. The skin and subjacent tissues became swollen and

painful, the swelling subsided in a few days, leaving a small indurated mass, which increased very slowly and with but little pain until some six weeks ago, when it was punctured by a *Koberaj*. The puncture healed in three or four days, but the tumour has since this increased rapidly in size, and been accompanied by much pain of a throbbing character."

The growth, on section, has a white, glistening, fibrous appearance; exudes on pressure a slimy, thickish, milky fluid, which, under the microscope, exhibits various shaped, multi-nucleated cells, abundant free nuclei, and much granular and molecular fat. Fine sections reveal a very characteristic scirrhus structure,—both stroma and cells being well marked, the former unusually thick and abundant, considering the very rapid growth of the tumour, as above related. *Presented by* Professor H. C. Cutcliffe.

79. A portion of the cutaneous cicatrix of a healed amputation (wound) at the hip-joint, for encephaloid carcinoma of the femur, showing nodular infiltration and recurrence of the growth. From a native lad, aged 15. There were similar secondary developments or deposits in the lumbar glands, lungs, diaphragm, &c. (See further, "*Surgical Post-mortem Records*," vol. I, 1877, pp. 397-98.)

80. A large epithelial cancer involving the skin and subcutaneous tissues of the sacral and gluteal regions of a native male (Hindu), aged 35. It constitutes a large, flattened, ovoid, and ulcerated mass, eight inches in length and six inches wide; has a hard, indurated base, and very uneven, fungoid, and irregular margins and surface. The former are from half to three-fourths of an inch in thickness, everted, and eroded, with numerous nodules and tuberculated excrescences.

History.—Three years ago, the patient states, an abscess appeared in the left gluteal region, which opened spontaneously and discharged foetid pus through four or five orifices in the superjacent skin. The swelling caused by the abscess subsided, but purulent material continued to drain through the sinuses, and the indurated condition of the surrounding parts persisted, and after a time began to extend, being accompanied by much pain. He then underwent a mercurial course, and was salivated. This was succeeded by much general debility, and no local improvement.

On the contrary, —a month after,—and just twelve months prior to admission into hospital,—he noticed the presence of nodular excrescences about the mouths of the sinuses. The intervening skin ulcerated, and took on similar fungoid changes, and in this manner the entire diseased surface has acquired its present appearance and infiltrating character. No hereditary history. Has never had syphilis.

Sections made through the margins of the fungating and ulcerating mass reveal a true epitheliomatous structure. The cuticular papillæ are much enlarged, and extend deeply into the subjacent cellulo-adipose tissue;—the epithelial proliferation within and beneath them is most luxuriant and abundant, and contributed to by a hyperplastic condition of the sebaceous glands, &c. "Nests" or "globes" are very abundant.

Presented by Professor J. A. P. Colles.

81. A small, flattened, warty-looking growth removed from the left leg of a native male patient, aged about 26 years. It is said to

have been of two years' duration, and to have appeared in an old cicatrix (left after the healing of a superficial abscess). It is fungating, papillomatous, ulcerated; about three and a half inches in length and one and a quarter inch in breadth. The epidermis is raised into tuberos and villous excrescences, and the surface of the growth generally has a warty appearance.

A fine section, under the microscope, exhibits well-marked epithelial growth,—the cell elements involving the cutis as well as the epidermis, and reaching into the sub-dermal tissues in the form of a small-celled or nuclear proliferation. Numerous epithelial “nests” and finger-glove-like prolongations into the subcutaneous connective tissue are observed. The growth appears to be, therefore, truly epitheliomatous (cancerous), not (warty).

- 82.** A flattened epitheliomatous growth removed from the front of the thorax of a native male, aged about 40. “It commenced, he stated, as a small hard swelling, about four years ago, and remained stationary up to within the last six months, when it ulcerated, and has since spread rapidly.

The growth is of rounded outline, but flattened and saucer-like. Has hard, scalloped edges. The surface is covered with luxuriant papillary developments, and has a yellowish-white colour. This part of the growth is soft; the base is firmer, and rests upon the pectoral muscles, portions of which have been removed with it.

Sections, under the microscope, exhibit a highly developing epithelial structure,—affecting chiefly the true skin or dermis,—which is much hypertrophied. It extends, however, into the subcutaneous cellulo-adipose tissue, which is abundantly infiltrated with small round cells and nuclei. Numerous “nests,” entire or fragmentary, are scattered throughout the sections. The growth is a true cutaneous epithelioma.

Presented by Professor K. McLeod.

- 83.** Epithelioma of the right fore-arm, affecting the skin and subcutaneous tissues on the anterior and outer aspects of the limb.

From a native male patient, aged 40. The growth forms a large fungating mass, four inches in length by three inches in breadth. Under the microscope it presents all the characters of epithelial carcinoma. The proliferation of large, polymorphous, epithelial cells in elongated prolongations from the cutis downwards, the presence of numerous “nests,” &c., are all well marked. The morbid cellular infiltration reaches the flexor muscles, but apparently invades only their superficial layers. The ulna and radius are both unaffected.

Presented by Professor S. B. Partridge.

- 84.** Epithelioma of the skin and soft parts on the inner aspect of the left foot and ankle,—treated during life by caustics. The patient, a native male, aged 35, was admitted into hospital in a very reduced and emaciated condition from pulmonary phthisis, and died of this disease about a week after. The morbid growth takes the form of a large spreading and eroding ulcer, which involves the skin, fasciæ, and the superficial muscles and tendons. It extends from the internal malleolus to the sole of the foot. The skin of the heel is not affected, nor the soft parts covering

the metatarsus and toes. The margins of the ulcer are thick and irregular. Its surface is highly vascular, nodulated or tuberculated, of a dusky-purplish colour (in the fresh state); here and there sloughy and softened, but, for the most part, firm and exuberant-looking. It apparently does not implicate the ligamentous structures of the foot. The posterior tibial artery (dissected out) is found pervious, as also its external and internal plantar branches. The latter lie in close relationship to the base of the ulcer in the sole of the foot.

Sections from the tuberculated surface of the ulcer exhibit a luxuriant growth of large, polymorphous, nucleated, epithelial cells, which are grouped together in irregular-shaped, solid, tubular masses. At the margins of the ulcer, the structures composing the skin are found in a state of active proliferation—especially the papillary layer; and the cutis vera generally is seen infiltrated with small round cells and nuclei. ("Surgical *Post-mortem* Records," vol. I, 1878, pp. 451-52.)

85. Epithelioma of the skin removed from the thigh of a native male, aged 60. The growth is said to have been of two years' standing. This is a large, unhealthy-looking ulcer, the size of a five-shilling piece. Its edges are raised and eroded, are formed by thickened tuberculated nodules of a rosy-red or greyish colour. The base is similarly, in parts, raised and rugged; in others, deeply excavated.

The structure, as seen under the microscope, is that of true epithelial cancer,—at the margins of the growth especially, the epithelial proliferation is most marked, and can be traced into the subjacent (subcutaneous) tissues in the form of small cells and nuclei, which are very abundant at the bases of the epithelial prolongations. Characteristic "nests," &c., are found in the superficial portions of the growth.

Presented by Professor K. McLeod.

86. A sebaceous cyst of oval shape, and about the size of a walnut. It contains thick, brownish, putty-like material, and many long yellowish hairs. *Presented by* Dr. E. Lawrie.

87. A cyst removed from the posterior aspect of the upper part of the right thigh of a native woman, aged about 30. The cyst-wall is alone preserved. Its contents were in a state of suppuration. The former consists of well-developed connective tissue, lined on the interior by delicate, semi-transparent, peltic patches, having a close resemblance to normal *skin*, *i.e.*, composed of superimposed layers of flattened epithelium, with traces of gland-structure and rudimentary hair bulbs and shafts. The growth is therefore a sebaceous or dermoid cyst. *Presented by* Dr. E. Lawrie.

88. Mycetoma of the left foot. From a native woman of Ajmere, in Rajpootana. The disease was of ten years' standing. After amputation the patient made a good recovery. The foot has been bisected by an ordinary scalpel passing through the tissues, from the interdigital space between the second and third toe in a line towards the middle of the tibia, and through the centre of the ankle-joint.

"The scalpel passed readily through all the tissues except the tibia and the portion of the astragalus articulating with it. The foot is enlarged in all directions; the toes are turned upwards; and there are several openings on the surface, which may generally be found to communicate with a cavity in the tissue below. Some of the orifices are plugged, more or less completely, by irregular-shaped aggregations of black substance, which can be picked out. On examining the section, the outlines of the tarsal bones can be made out; but the bones occupy an irregular space perforated by numerous excavations in all directions."

* * * "The cavities are in some cases isolated, but in others they communicate by means of one or more channels with adjoining cavities, the cavities and channels being everywhere lined by a more or less dense, smooth membrane of tough fibrous tissue. The cavities are of very unequal size. They vary from being just large enough to contain a pellet of small shot to being sufficiently capacious to hold a bullet with ease. They almost invariably contain irregular lumps of dark granular substance, which more or less completely fills the cavities and channels continuous with them. Frequently, however, the dark material occupies but a portion of the cavity, even though the cavity be completely isolated. The fatty padding of the sole of the foot appears to be normal, but in two or three places small groups of the lobules have been replaced by cavities containing the dark material."

Microscopically examined, the muscular tissue is for the most part healthy. The fibrous tissue lining the cavities and channels is "in no way to be distinguished from similar tissue lining cavities in other abnormal conditions." The bone, though soft and much cancellated and porous, shows nothing else remarkable. The dark material "after subjection to more or less prolonged action of liquor potassæ" exhibited numerous filaments and circular bodies. (Lewis and Cunningham,—*vide Spec. I.*, p. 43, "Report on the Fungus Disease of India," 1875.)

Presented by Dr. Thos. Murray, Civil Surgeon, Ajmere.

89. A well-marked example of mycetoma or "Madura foot." "The disease commenced eighteen months before the date of amputation as a slight swelling, with little or no pain. To this succeeded a small papule, which bursting, discharged small black grains of a substance resembling gunpowder."

In the preparation three longitudinal sections have been made from the dorsum downwards through nearly the whole thickness of the foot, exhibiting, very distinctly, the characteristic softening and hollowing out of the osseous structures, with long sinuous channels leading from them to the surface, and the presence of an abundant dark, granular, sooty deposit in both excavations and sinuses, and also, as an infiltration, in small masses, into the soft parts beneath the skin. On the plantar aspect, where the skin has been preserved entire, the equally characteristic appearances presented by the raised and perforated papules which open into the sinuses leading into the deeper parts or interior of the foot are well seen, as also the generally hypertrophied or thickened condition of the whole integument. The foot (left) has been

removed by Chopart's amputation. "The central portion of the second metatarsal bone, is, in great part, occupied by a dark-brown, spherical mass about an inch in diameter, shaped something like a potato, and presenting a slightly radiating, finely striated appearance on section. It is moulded to the cavity in which it is lodged, and its projecting nodules fit accurately into adjoining cavities in the surrounding tissues." * * * * *

"The cavity communicates with both dorsal and plantar surfaces of the foot by means of irregular channels containing small black masses. There is another large cavity situated somewhat behind the one just described and above the plantar fascia. It also contains dark tuberculated masses, and opens into several small cavities, which communicate with the surface on the sole of the foot." Several other cavities with similar contents are exposed by the other sections made through this foot.

"The black material contained the usual filaments, but none of these could be found in either the muscular, osseous, or fibrous tissues of the surrounding parts, although carefully searched for by every known method." (Lewis and Cunningham, *loc. cit.*, p. 52, *Spec. No. V.*)

Presented by Dr. H. F. Williams, Ferozepore.

90. Mycetoma or fungus-disease of the right hand, which has been amputated a short distance above the wrist-joint. "The hand is considerably thickened and the wrist swollen. The palmar surface is puffed up, and numerous openings both here, on the dorsal surface, and between the fingers, communicate with a large cavity within. A scalpel carried longitudinally through the middle of the hand readily divides the bones that still remain, as well as the end of the radius for a short distance. All the carpal, together with a great part of the metacarpal bones are destroyed, the basal half being the portion in the latter most affected. The phalanges are somewhat softened, but not eroded, and contain no black matter." * * * * *

"The cavities in the bones are not lined, and the bone presents the appearance of ordinary caries. The cancellous tissue of the end of the radius, and of such portions of the carpal bones as remain is very porous and widely opened out. Where, however, the cavities are located among the soft tissues, they are lined by a membrane. The tendons are not affected. The large cavity referred to as communicating with the surface by means of various channels, occupies the space normal to the carpal bones, and is filled with fragments of these bones mixed with black granular material, which also extended into the channels alongside of the tendons."

"The black material, after prolonged immersion in liquor potassæ, was found to contain filaments, but they were by no means so plentiful as ordinarily observed. Not the slightest indication of any such filaments could be demonstrated in any of the parts recognizable as tissues whether diseased or healthy." (Lewis and Cunningham, *loc. cit.*)

91. Mycetoma of the right hand. "The whole hand is considerably swollen; and the fingers bent towards the palm. On the dorsum of the hand are several sinuses, through which the characteristic

black granules were discharged." (Colles.) The longitudinal section which has been made through the hand shows much thickening and matting together of the superficial soft parts (tendons, fasciæ, and cellulo-adipose tissue, &c.), with the deposit of masses of very dark granular material amidst them. This deposit extends upwards on the back of the wrist, beneath the skin and superficial fascia, in a linear manner. The deeper structures--carpal and metacarpal bones—are softened, carious-looking, and hollowed out in various directions, so as to present a somewhat honeycombed appearance, the small compartments of which are more or less filled with the same black pigment matter.

This hand was also examined by Drs. Lewis and Cunningham (*loc. cit.*, p. 50, Spec. No. III, Dark Variety), who report—"the distal end of the os magnum is found to be completely disintegrated, and between it and the upper end of the second metacarpal bone is lodged a mass of dark-brown substance, the brown tint predominating towards the centre, where it might almost be described as presenting a dark-red tint. Several other aggregations of dark material are found lying between this mass and the flexor tendons." * * * * "In the dark masses filaments could be distinguished after prolonged immersion in potash; but, in the yellowish, roe-like particles, picked out of the same cavities and similarly treated, no such filaments could be demonstrated when the particles were carefully selected."

Presented by Mr. P. A. Minas, Civil Surgeon, Hissar.

92. A mycetoma of about eleven years' growth. The patient, a Hindu, aged 40, was a native of Burdwan. "There was no history of syphilis or of injury to the part. Amputation at the upper third of the leg was successfully performed."

The specimen (right foot) exhibits all the well known characters of the dark variety of this disease, described so fully in connection with the preceding preparations. The morbid structures were carefully examined immediately after the operation, and while the parts were quite fresh, but no traces of sporules or filaments could be discovered—no fungus forms of any description—in either the diseased tissues or in the dark pigment-material infiltrating them. *Presented by* Professor Gayer.

93. A mycetoma or "fungus-foot" (right), removed by amputation at the lower third of the leg, from a Mahomedan labourer, aged 25, "a resident of Kistnanagore (a village about 40 miles north-east of Calcutta)."

There are numerous prominent perforated papillæ on the plantar and dorsal aspects of the foot, into which a probe can with ease be passed to a depth of from four to five inches. The whole foot is much clubbed and swollen, and the superficial soft parts greatly thickened;—these conditions extending to about two inches above the ankle-joint. The lower ends of the tibia and fibula are also involved in the disease. On longitudinal section, the bones of the tarsus and metatarsus are found extremely soft and spongy,—cutting most readily with a scalpel.

History.—The disease commenced about two years ago by the spontaneous appearance of certain papules or small vesicles over different parts of the sole of the

foot. These lasted a week or ten days and then "burst," discharging a little pus. While one crop of such formations was healing a second appeared,—sometimes on the sole, at others on the dorsum of the foot, and followed the same course. At this time, he states, there was no appreciable swelling of the foot, and no pain experienced except in walking. About twelve months ago, however, he twisted the foot "while reaping corn," and the accident was followed by enlargement and swelling of the same, which rapidly increased for about two months, and then as suddenly subsided. During this time he experienced very severe lancinating pain in the part: numerous fresh vesicles appeared over the thickened skin, discharged thin purulent fluid, and their orifices assumed a somewhat prominent and fungoid appearance. He was weakly-looking and anæmic when admitted into hospital, but there was no visceral disease, and, after the amputation, he recovered completely. There was no evidence of constitutional syphilis or struma.

This is a well-marked example of the pale or ochroid variety of mycetoma, and shows characteristic fatty degeneration with caries of the soft parts and osseous structures, but there is an entire absence of the dark, gunpowder-like pigment matter met with in the other variety of this disease.

Careful microscopical examinations of all the tissues and materials present were made by Drs. Lewis and Cunningham, "but in no case did they afford the faintest evidence of the presence of any fungal or fungoid bodies, or of anything save degenerations of the normal elements of the tissues." (*Vide Spec. No. I, "Pale Variety," p. 15, loc. cit.*) Presented by Professor H. C. Cutcliffe.

94. Mycetoma of the left foot,—a section showing the peculiar and characteristic fibro-adipose degeneration of the tarsal and metatarsal bones. The skin on the dorsum and inner side of the foot is covered with numerous rounded and slightly elevated fistulous openings, which lead into long sinuous channels communicating with the diseased osseous structures. No black adventitious material is found. The specimen belongs to the pale variety of so-called "fungus-foot."

The patient was a young Mahomedan adult, a resident of Burdwan.

This preparation is referred to by Sir Joseph Fayrer in his "*Clinical and Pathological Observations in India*," and the following interesting details are supplied by Drs. Lewis and Cunningham in their "*Report on Fungus Disease in India*," (p. 17, Spec. No. II.) "Numerous crater-like openings on the surface communicate with channels lined by smooth membrane, and leading into the interior of the foot. On examining the section, the foot is seen to be greatly thickened below the line of the bones. The thickening has occurred both below and above the plantar fascia, foci of degeneration being present in both situations, although more abundantly below than above the fascia. These foci consist of cavities lined by smooth membrane and containing gelatinous and caseous matter, or distinct roe-like masses of minute rounded particles. These roe-like aggregations are quite free in the cavities, and surrounded with more or less mucoid or gelatinoid semi-fluid material."
* * * "In some cases the cavities are perfectly isolated, occurring among healthy fat-masses, in others they are close to one another, only separated by their limiting membranes; in others they communicate directly or indirectly with one another, and in some cases two or more appear to have coalesced entirely, so as to form one large, frequently irregular, cavity. In almost all instances the openings on the surface of the foot are found to lead by means of channels into such cavities, whilst another series of channels connected cavities or sets of cavities with one another." The bones are "soft and

oily." The muscular and tendinous structures "little, if at all, affected." As regards the caseous matter and roe-like particles within the cavities, the former consists of "yellowish amorphous material mingled with oil-globules; readily acted upon by liquor potassæ, and when treated with this reagent frequently gave rise to an abundance of tubes, filaments, and globules of myeline. The particles forming the roe-like masses are composed of a large central mass or nucleus of similar caseous matter densely clothed with radiating crystals." * * * * "Prolonged and careful microscopic examination failed to reveal the presence of any fungoid elements notwithstanding the use of most various reagents,"

Presented by Professor J. Fayrer.

95. "A foot affected with "Podelkoma," "mycetoma," or "tuberculosis pedis," (called "*keernal*" by the people of Rohtak, and "*Keereenagrah*" in Sirsa)." The appearance of the foot is very characteristic. It is greatly swollen, especially from above downwards; the tarsal arch has completely disappeared; and both plantar and dorsal surfaces are covered with fistulous openings.

"The toes are shortened, turned upwards, and more or less drawn backwards into the foot, so that the latter presents a peculiar thick, stumpy aspect." A section has been made through the foot longitudinally. All the osseous structures are greatly softened, porous in texture, and full of yellow oily material, with here and there distinct aggregations of roe-like particles. The soft parts show various degrees of fatty degeneration. The cavities in them are occupied by "masses of circular, yellowish-white grains or particles, like small seed or ova, aggregated into masses of various sizes, and evidently forming the roe-like bodies so constantly described as characteristic of the discharges and tissues in this variety of the Madura disease."

"All the varieties of morbid material present in this case were carefully ransacked with the aid of the most various agents and appliances, with the view of ascertaining the presence of any vegetable organisms or other foreign bodies as constituents of them, but entirely in vain." The disease consists merely of "a degeneration of the normal constituents of the tissues, unassociated with, and uncomplicated by, the presence of any extraneous elements." (Lewis and Cunningham, *loc. cit.* p. 20, *Spec.* No. III, "Pale Variety.")

Presented by Dr. W. P. Dickson, Rohtak.

96. Mycetoma of the right foot. *Presented by* Dr. Harvey, (Bhurt-pore), who says—"it is the foot of a man aged 50. I was first inclined to think it a case of Fungus Disease. I can, however, detect no sporules, and there is no history of any black discharge, although, there is a good deal of dark tissue about the sole. If it is a sample of elephantiasis, the case is a peculiar one, as the leg was quite healthy above the ankle, and there was no enlargement of the glands in the groin. The disease began five years ago as a discolouration near the ball of the great toe. A vesicle formed after a time and discharged a white fluid—thick and glairy—not like pus. It has gradually increased, and the foot weighs 9lb 10 ozs. The openings are very numerous, and a probe goes deep down many of them, as it does in cases of mycetoma."

The specimen is undoubtedly a mycetoma. The shape of the foot is characteristic,—the arched prominence of the dorsum being well marked, the toes retracted, &c. There are also numerous sinuses leading down deeply into the morbid tissues, and when they are slit up are found to be occupied by soft, yellowish or yellowish-pink, granular material. Moreover, a longitudinal section of the foot having been made, this same granular matter is seen filling numerous small cavities both in the cutis (which is a good deal thickened), and in the bones of the tarsus. The latter are exceedingly soft and brittle,—the metatarsal bones in a state of dry necrosis. These conditions are distinctive of mycetoma, and are not met with in elephantiasis.

The microscopic examination of the coloured granular material shows no spores or mycelium, although macerated for several hours in liquor potassæ; it appears to consist of amorphous fat granules and molecules only, and probably represents a peculiar granular change or metamorphosis of the fat into which the bones and other tissues have slowly become converted, and is identical with the roc-like particles characteristic of the pale variety of mycetoma. In the pinkish tinged material the remains of altered blood corpuscles are visible.—J. F. P. McC.



CATALOGUE

OF THE

PATHOLOGICAL MUSEUM.

MEDICAL COLLEGE, CALCUTTA.

PART IX.

TUMOURS AND MORBID GROWTHS.

SERIES XVII.



SERIES XVII.

TUMOURS AND MORBID GROWTHS.

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1. A round-celled sarcoma involving the lower end of the left radius. The growth has originated in the cancellous tissue of the lower extremity, and, extending centrifugally, has caused thinning and expansion of the bone around it, so as to form a tumour the size of a large orange, of lobulated outline and very soft consistency. An investment by the original periosteum (greatly developed) can be traced over the greater part of the tumour, but is wanting where the latter has ulcerated through to the surface. At the periphery, for a depth of from $\frac{1}{3}$ " to $\frac{1}{2}$ ", the growth is semi-solid in consistency, beyond which, as the centre is approached, it is seen to have completely broken down into a pulpy, soft, brownish or blackish mass of disorganising tissue, which, under the microscope, shows only the *débris* of cells, much fat, and pigment matter (blood). Sections from the firmer portions of the tumour reveal all the characters of a fast-growing sarcoma, viz., a highly cellular tissue—the elements mostly round, some spindle-shaped, a few myeloid,—nucleated, granular, lying close together, and with no formed intercellular substance. No history.

2. "Two fungating encephaloid tumours projecting considerably above the integument, and connected with the soft parts covering the olecranon process of the ulna. They are lobulated. The patient was a Mahomedan, forty years of age. The disease had only lasted six months. During its extirpation, resection of the elbow-joint was performed, because it was thought that the head of the ulna participated in the morbid growth." (Ewart.)

The growth under the microscope exhibits a purely sarcomatous (round-celled) structure, and is *not* encephaloid. The posterior surface of the olecranon process is deeply excavated, and from the periosteum or cancellous tissue of the bone here the tumour has probably developed. (J. F. P. McC.)

3. An excavated, crater-like growth, developing from the metacarpal bone of the thumb. A section shows that this bone has almost entirely disappeared,—has been absorbed into the growth. The first and second phalanges are not involved. The structure is everywhere soft and friable, smooth or but slightly fibrillated. Under the microscope it exhibits a highly cellular condition,—the cells are round or spindle-shaped (the majority round), a little larger than leucocytes, and distinctly nucleated. There is no true stroma; the intercellular substance is throughout scanty, in parts shows faint fibrillation.

The soft parts on the dorsum of the thumb are extensively ulcerated. No history.

4. Round-celled sarcoma. A portion of the skull of a Hindu, aged 57, showing the presence of a malignant growth at its base, which, developing apparently in the sphenoidal sinuses, has extended into the nasal and orbital fossæ, and, through the cribriform plate of the ethmoid, into the cranial cavity. The right eyeball is pushed outwards, and a portion of the tumour protrudes

through the skin at the inner canthus; another portion fills and projects from the right nostril. In the cranium it forms an irregularly lobulated mass, the size of a hen's egg, in the anterior cerebral fossa, covering the ethmoid, overlapping the orbital plates of the frontal, and hollowing out the anterior cerebral lobe in this situation. The consistency of the morbid growth is everywhere soft; it is homogeneous on section; and consists of small, round, nucleated cells, closely heaped together, and with no formed intercellular structure but that derived from the remnants of the invaded tissues. The tumour is therefore, evidently, a round-celled sarcoma.

5. Malignant tumour involving the lower ends of both bones of the right forearm of a native male (Hindu), aged 20.

"The disease began a year ago, but has rapidly increased during the last two months, and has also been very painful. The bones of the forearm, at their lower third, are completely fused with the tumour, and greatly disorganized. The carpal bones are also found in a state of fatty degeneration,—cutting readily with the knife. The joints are intact."

This large tumour appears to have developed from the subperiosteal tissue of both bones of the forearm, but particularly from that of the radius. The periosteum, greatly stretched, and in parts imperfect, still forms a kind of capsule to the growth. The structure, under the microscope, consists of closely packed, round or slightly oval, small, nucleated cells, having no intercellular material, but heaped up irregularly in large loose masses. The consistency is soft; the vascularity great. (Round-celled sarcoma.)

Presented by Professor J. Fayer.

6. A malignant tumour, situated on the posterior aspect of the right forearm. From a Hindu boy, aged 10 years. Removed by amputation at the lower third of the arm.

The tumour was of very rapid growth, and bled considerably from time to time.

After amputation the patient did well, and was discharged from hospital. He was readmitted, however, in four months' time with three small growths on the vertex of the skull, which were also suspected to be malignant, but the friends objected to any further operative interference, and the boy was removed.

The tumour of the forearm is oval in shape, flattened below where it rests upon the deep fascia, from which, and from the subcutaneous cellular tissue of this part, it has apparently developed. The bones of the forearm are not involved. The skin is closely and intimately connected with the morbid growth, and in several situations has ulcerated and allowed of the protrusion of the tumour-tissue in the form of fungoid, lobulated masses. The structure is for the most part purely cellular—small, round, uniform, nucleated cells, with but scanty intercellular tissue. In parts, however, there is a considerable admixture of fibrous tissue, and a disposition of the latter in disseminations or partitions between lobules wholly composed of soft cellular elements. The

growth is undoubtedly malignant,—as was diagnosed during life,—and may be regarded as a round-celled sarcoma.

Presented by Professor H. C. Cutcliffe.

7. A malignant (sarcomatous) tumour involving the upper part of the right arm. From a native male (Hindu), aged 25. The growth was of eleven months' duration. The arm was amputated at the shoulder-joint.

This is a lobulated mass, the size of two fists, occupying the anterior and outer aspects of the upper and middle thirds of the arm. It does not involve the bone, but appears to have originated in the intermuscular fasciæ and connective tissues generally of this part, invading the muscles themselves and portions of the integument also. The consistency of the growth is everywhere soft; in parts, just beneath the skin, this is still more marked owing to inflammatory changes (suppuration, &c.). The cut surface is lobulated, smooth, of a pinkish-white colour.

On microscopic examination the structure is densely cellular, the cells are nucleated, rather larger than pus corpuscles, chiefly round,—a few spindle-shaped. No appreciable or "formed" intercellular substance exists. The growth is a round-celled sarcoma.

Presented by Professor W. J. Palmer.

8. A preparation showing the vault of the skull perforated by a large malignant tumour growing from the dura mater.

The right half of the frontal bone—including the orbital plate—has been absorbed; there is a gap thus left with sharp thin edges, through which protrudes the morbid growth. The latter is soft, ovoid in shape, about the size of an orange. It is attached to the upper surface of the dura mater, in the median line, and invested by a kind of pseudo-capsule formed by portions of the pericranium and adherent occipito-frontalis muscle,—the entire thickness of the bone between these structures externally, and the dura mater internally, having been absorbed. The tumour is slightly lobulated, smooth, and homogeneous on section, reddish at the centre, paler peripherally.

Under the microscope, the structure is found to consist of cells about the same size as, and also larger than, white blood-corpuscles (leucocytes), with large single or double nuclei and nucleoli. No "formed" intercellular material. Blood-vessels large, thin-walled, and very numerous. The growth is a small round-celled sarcoma, and was diagnosed as such during life by means of exploration with a grooved needle.

The patient was a native (male), aged 40. On account of the nature of the growth no operative interference was attempted. He gradually became exhausted by hectic and pain. A secondary development took place in connection with left femur, and resulted in fracture of that bone—as discovered *post mortem*. (See further, "Surgical *Post-mortem* Records," vol. I, 1878, pp. 483-84.)

9. A round-celled sarcoma involving the bony and soft tissues on the anterior aspect of the lower third of the right forearm.—From a native male patient, aged 50.

"The disease is said to have followed an injury to the parts affected, received about a year ago, and the present exuberant, semi-

fungoid appearance of the growth has resulted from incisions made into the tumour (four months ago) by a native barber."

The tumour is about the size of an orange; it is broadly lobulated; the surface brownish,—encrusted with much hardened sanguineous discharge. On section, the consistency is soft, and the cut surface blotched from blood-staining and extravasation. The growth appears to have originated in the lower end of the ulna,—the last two inches of which have been completely absorbed. The radius is also involved, but not to so great an extent,—its broad articular extremity is found hollowed out, softened and disorganised. The carpal bones are not affected. The tumour implicates all the soft tissues on the anterior and ulnar side of the forearm.

Microscopically examined, the structure of the growth is highly cellular; the cells are round or oval, and a few spindle-shaped; have large nuclei, and a granular protoplasm. There is little or no intercellular substance, and no stroma. The blood vessels are large and numerous,—their longitudinal and cross sections are observed tunnelling the soft cellular tumour-tissue in various directions.

Presented by Professor K. McLeod.

10. A subcutaneous malignant tumour (sarcoma) from the left dorsal region (back) of a native female, aged 18, who died in hospital. It was closely connected with the spinal muscles and fasciæ, superficial and deep, and a small prolongation made its way between the ribs into the cavity of the thorax. It is an ill-defined, lobulated mass, and extended on the back from the level of the spine of the scapula to the lower border of the last rib, infiltrating the subcutaneous tissues widely and deeply. Sections from both dorsal and intrathoracic portions of the growth exhibit a highly cellular structure under the microscope. The cells are uniform as regards size, are rounded or slightly oval, possess one or two bright nuclei; many are highly granular from fatty changes. There is no intercellular formed material, except here and there, where the disintegrating fragments of invaded tissues (muscular and fibrous) are seen interposed between groups or masses of the cell-elements. The growth is very vascular,—permeated in every direction by large soft-walled capillary vessels. There is no capsule,—the tumour-tissue is lost amidst the surrounding normal structures, *i.e.*, is distinctly infiltrative in character. It is undoubtedly a round-celled sarcoma. (*See further, "Medical Post-mortem Records," vol. III, 1879, pp. 384-85.*)
11. A tumour involving the whole of the right forearm of a Hindu child, aged $2\frac{1}{2}$ years. Amputation of the limb just above the elbow-joint was performed. It is said to be a growth of twelve months, and to have commenced as a small nodular swelling at the lower third of the anterior aspect of the forearm. It now forms a smooth, oval-shaped mass embracing the whole of the forearm,—from just below the elbow to the wrist-joint, (neither the elbow nor the wrist-joint being, however, involved). It projects on both the anterior and

posterior aspects of the limb, and more on the ulnar than the radial side. On a longitudinal section being made the structure and origin of the growth are revealed. It consists of soft, brain-like, pinkish-white tissue, which has developed apparently from the ulna, absorbing this bone almost completely, and then infiltrating the surrounding soft parts both in front and behind that bone, and extending across to the radial side of the forearm. The periosteum of the bone—much thinned and stretched—forms, in parts, a kind of capsule to the tumour, but is incomplete or imperfect.

Microscopically, the structure of the growth is highly cellular; the cells are small, round, and nucleated; some are spindle-shaped. There is no stroma, no intercellular “formed” material. Large blood-vessels permeate this tissue in various directions, and the superjacent muscles and other soft parts, where the pseudo-capsule is wanting, are infiltrated with a similar small-celled growth. The tumour is without doubt a *round-celled sarcoma*.

Presented by Professor K. McLeod.

12. A malignant tumour, of about eight months' duration, removed from the inner side of the lower part of the left arm, just above the elbow.

The patient, Gopal, a Hindu, aged 34, stated that he first noticed a painful swelling, the size of a small nut, at the bend of the elbow. It has gradually enlarged during the past eight months, but has not been very painful. The skin over the tumour has become discoloured and adherent to it; and the latter is not freely movable upon the subjacent soft parts. A large indurated gland in the axilla was removed at the same operation. No general hypertrophy of the lymph-glands exists. The patient is healthy-looking, and there is no hereditary or family history, and no history of syphilis.

The tumour-mass is about the size of one's fist; lobulated in outline,—this condition being well seen on section; and its glandular origin is distinct, even to the unaided eye. It is moderately firm, of a pinkish-white, or, in parts, of a yellowish colour, and consists, apparently, of a group of infiltrated and enlarged lymph-glands, varying in size from a hazelnut to half a walnut, bound closely together by soft fibrous tissue, and fixed to the superjacent skin.

On microscopic examination, very thin and frayed out sections exhibit, in parts, a delicate reticulum of connective tissue, with small, round, nucleated cells. The reticulum, however, is in many sections quite absent. The cells are uniform and granular,—exist in large numbers. The tumour appears to be a *lympho-sarcoma*, i.e., a round-celled sarcoma originating in the lymph-glands at the bend of the elbow.

The growth recurred at the upper part of the wound before the latter had quite healed. A considerable quantity of soft, nodular, pinkish-white material was removed by a second operation (on the 6th of June 1880). The infiltration, however, of the deeper structures continued, burrowing along the intermuscular and vascular structures of the arm as high as the axilla,—portions of morbid growth being so situated as not to permit of their being dissected out. The arm was therefore amputated

at the shoulder-joint (on the 15th June). Almost all the axillary glands were involved, and there were prolongations from the tumour-tissue inwards between the pectoral muscles, &c. This tissue, re-examined microscopically, showed an almost purely cellular structure; the cells, as before, small, round, granular and nucleated. This structure, with the rapid recurrence of the growth, and its highly infiltrative character, remove all doubt as to its sarcomatous constitution (small round-celled sarcoma.)

Presented by Professor D. O'C. Raye.

13. A malignant tumour (small round-celled sarcoma) of the right arm, removed by operation (amputation at the shoulder-joint), from a native male, aged 18. It is about the size of the foetal head, and of about eight months' duration.

The tumour is somewhat ovoid in shape, and surrounds the upper two-thirds of the shaft of the humerus. It implicates the surrounding soft parts, and the skin over it has ulcerated in four or five places, permitting thus of the protrusion of portions of the growth in fungoid form. On a longitudinal section being made through the bone, the development of the tumour is seen to have taken place from the periosteum of the upper and middle thirds of the shaft, while, at the centre of the latter, the growth has made its way into the medullary canal, and an apparently spontaneous fracture of the whole thickness of the bone has taken place at this situation. The consistency of the tumour is soft and succulent; it is throughout highly vascular, and presented, in the fresh state, a rosy-pink colour, with blotchings and dark-purple blood-extravasations in different parts.

Examined microscopically, the structure is highly cellular. The cell-elements are uniformly small and round. There is no intercellular tissue or stroma; and the muscular and other soft tissues of the arm are found diffusely infiltrated. The morbid growth is, therefore, a round-celled sarcoma.

Presented by Professor K. McLeod.

14. A lobulated tumour, the size of the foetal head, involving the right half, the symphysis, and a portion of the left half of the lower jaw, which has been extirpated by disarticulation of the right condyle, and division of the bone just beyond the left first molar tooth.

On section, the tumour substance is soft, and markedly alveolated or cystic-looking—the alveoli being chiefly formed by expansions of the sockets of the teeth, the growth involving the interior of the bone as well as surrounding it, and implicating the muscles, skin, and soft structures generally. No history.

Microscopically examined, the structure of the tumour is highly cellular;—the cells large, rounded or oval, nucleated, lying close together in masses in a kind of alveolar stroma, closely resembling soft cancer except in the more uniform size and shape of the cellular constituents, and therefore, probably, to be regarded, more strictly, as *alveolar sarcoma*.

15. A large fungus-looking growth involving the skin and subcutaneous tissues on the inner aspect of the right hand. The growth reaches and partially invades the fifth metacarpal bone,—in fact,

appears to have originated from the periosteum covering it, or from the superjacent connective tissue. The tumour is very vascular,—the vessels forming large loops and plexuses in various directions throughout its substance. The latter is remarkably soft and cellular. The cells are large, round or oval, uniform as regards size, and contain single, distinct and prominent nuclei. No stroma exists.

The normal papillæ of the skin are much exaggerated, and their epithelia in a state of proliferation, but not extending below the papillary layer of the cutis vera.

The growth is a *large-round-celled or alveolar sarcoma*.

Presented by Dr. Herbert Baillie.

16. "A large tumour involving the whole of the soft parts on the femoral aspect of the knee-joint" (left), "and also those surrounding the anterior and lateral aspects of the inferior third of the femur. The interior of the knee-joint is also implicated."
 * * * * * "The bone, part of which is denuded of periosteum, is roughened and somewhat cribriform in the lower two inches of the shaft and inferior extremity. Posteriorly, large nodules are seen filling up the popliteal space, and displacing the healthy parts in that region." (Ewart.)

The structure of the growth is highly cellular under the microscope,—the cells are large, almost "epithelial" in character, have large, single or double nuclei. Those situated in the deeper strata of the tumour-tissue are round; more superficially or peripherally, they are spindle-shaped. All are closely packed together, with little or no trace of any intercellular structure. All the soft tissues surrounding the knee-joint and femur—the ligaments, muscles, fasciæ, &c.—have been implicated. The tumour is, evidently, an *alveolar sarcoma*. (J. F. P. McC.)

Presented by Professor J. Fayer.

17. A slightly lobulated tumour, removed from the left parotid region of a Mahomedan, aged 26. It is about the size of an orange, and was said to be a growth of about two years,—slow and painless at first, but very rapid and painful during the last six months. The tumour is invested by an incomplete or imperfect capsule of connective tissue, and is, for the most part, smooth and homogeneous on section.

The structure, microscopically, consists principally of cells about twice or three times the size of blood-corpuscles, round, granular, and with generally a single, large, central nucleus. There is very little intercellular material, and that which exists is composed of delicate filaments of connective tissue, forming an indistinct and irregular stroma. The cells are throughout uniform in shape (round or oval); a few are almost as large as epithelial cells. The tumour appears to be a *round-celled sarcoma* of the larger-celled variety (*alveolar sarcoma*).

Presented by Professor H. C. Cutcliffe.

18. Large round-celled sarcoma. A growth about the size of one's fist, removed from the right groin of a young native adult, and said to have been of only three months' duration. The mass looks at first sight as if composed of a series of enlarged and coherent lymphatic glands, but on closer examination it is

observed that the glandular appearance is confined, for the most part, to the peripheral portions, while, at the centre of the growth, there is a smooth, soft, pinkish-white nodule, about the size of a hen's egg, which, in the fresh state, was deeply blood-stained and of a dark red colour, especially where it has ulcerated through the superjacent skin.

This growth, examined microscopically, consists of large round cells, approaching the epithelial type, with one or two large nuclei, and a granular protoplasm. They lie close together, without any stroma or alveolar arrangement, or but faint traces of the same. At the periphery, the nodule (which itself has probably originated in a lymph-gland) is blended with a series of soft and succulent lymphatic glands (the inguinal). In them their proper adenoid structure is quite distinct, and is quite different from that of the central mass, although here and there transitional changes are observed,—the cells becoming larger, the intercellular reticulum softening, &c. The tumour is undoubtedly malignant, and of the type known as large round-celled or alveolar sarcoma.

19. A malignant tumour (sarcoma) of the right leg. From a native male patient, aged 19. It is said to have been a growth of only about three months' duration. The glands in the groin were not enlarged or indurated. The patient was weak and much emaciated. The morbid growth consists of an irregularly ovoid fungating mass surrounding the upper third of the leg, and involving the skin and soft parts down to the bones, which are superficially necrosed and wasted, the tibia showing also some condensation of the cancellous structure of the head, but a highly fatty condition of the medulla. The substance of the tumour is very soft; composed of pale-pink or pinkish-white nodules of varying size, with intervening broad, flattened infiltrative growths. There is no capsule, and no strict definition or limit to the tumour. The superior epiphysis of the tibia has separated from the shaft, but the knee-joint does not appear to have become involved.

Microscopically examined, the structure is highly cellular. The cells are somewhat large,—two to three times the diameter of a blood-corpuscle,—are round or oval,—a few spindle-shaped,—and contain single, large, prominent, and very distinct nuclei, occupying a considerable portion of the protoplasm. The growth is therefore, undoubtedly, a large round or oval-celled sarcoma.

Presented by Professor D. O'C. Raye.

20. Extirpated eyeball, showing complete disorganisation of the globe, and the presence of a soft, pale-yellowish growth (partly detached), developing in the vicinity of the optic nerve, and involving the sclerotic coat,—a glioma. Its structure consists of small round, more or less uniform, nucleated cells, about the size of leucocytes, with a scanty, fibrillated, intercellular tissue,—interspersed with broader bands of fibro-elastic tissue, derived apparently from the sheath of the optic nerve, and from the sclerotic coat, which serve to map out the substance of the tumour into small divisions or lobules.
21. Glioma of the eyeball, in parts pigmented. The globe is disorganised; the new growth fills the ocular cavity, and covers about two-fifths of the posterior surface of the sclerotic, on either side

of the optic nerve. In this situation it appears to have originated. The structure consists of small round or slightly angular cells, closely packed together, with a delicate fragmentary and imperfect stroma of connective tissue. The cells are nucleated, and many of them darkly pigmented.

Presented by Dr. Herbert Baillic.

22. A lobulated growth, the size of a small orange, removed, together with the disorganised eyeball, from a native child aged two-and-a-half years. It had been growing for only two months. The greater part of the growth surrounds the optic nerve and sheath, and the posterior two-thirds of the sclerotic coat. Towards the anterior aspect of the eyeball a rounded, soft, spongy, fungus-like protrusion exists.

Sections made through different portions of the mass exhibit, under the microscope, a very highly cellular structure. The cells are the size of white blood-corpuscles, mononucleated, slightly granular, mostly round, a few angular or otherwise distorted. These are heaped together without any very definite arrangement, and separated by a very scanty fibrillated connective tissue,—no true stroma. A large quantity of blood-pigment (hæmatoidin) granular and reddish-brown, free or contained by certain of the cell-elements—also exists. The sheath of the optic nerve and the sclerotic appear to have been the matrix or site of origin of the growth, which has, subsequently, by pressure, destroyed the structure of the eyeball. The tumour is a true glioma.

Presented by Professor H. Cayley.

23. A tumour of the orbit; removed from a native child. It is an ovoid mass, the size of one's fist; very soft and pulpy in consistency. On section, a more or less homogeneous, pinkish-white surface is presented, giving a brain-like appearance to the growth. In parts it has a dark-red or purplish colour from blood-staining and extravasation. A thin rim of dense white fibrous tissue represents the remains of the sclerotic coat; no trace of the other structures of the eyeball can be identified. The growth seems to have involved the whole of the globe, and also the muscles, cellulo-adipose tissue, &c., filling up the rest of the orbit.

On microscopical examination, it proves to be a glioma; consisting of small, round, nucleated cells, scarcely larger than leucocytes, closely packed together; but, on careful brushing-out under water, a very delicate connective tissue reticulum can be distinguished; this in parts is well formed, in others is itself immature. There is no trace of any cancer structure.

Presented by Dr. E. Lawrie.

24. A tumour from the orbit of a native child, with also the extirpated eyeball. The latter is entire but soft, and partially disorganised, with—in the fresh state—an opaque, yellowish-white soft cataract visible through the transparent cornea. The optic nerve is not involved, but its sheath is vascular, thickened, and slightly adherent to a portion of the soft, pinkish-white growth, which is intimately connected with the posterior

surface of the sclerotic coat. This growth or tumour is altogether about the size of a walnut; it has no capsule, and no strict definition.

Examined microscopically, is seen to consist of small, round, nucleated cells, with a scanty, fibrillated, intercellular tissue, and throughout highly infiltrated with granular and molecular fat. It appears, therefore, to be a *glioma*.

Presented by Professor H. Cayley.

25. A small-celled, spindle-celled sarcoma, "removed from the leg." This is an irregularly rounded and lobulated tumour, possessing also a somewhat fungoid appearance. Its structure, under the microscope, is highly cellular; the great majority of the cells are very small, narrow, and spindle-shaped; grouped together without any intervening "formed" material. Intermixed with these are small round cells. They all contain rounded or oval nuclei, single or double. No history.

26. A large, lobulated tumour, of soft consistency, "removed from the arm." No history. The structure is densely cellular. The cell-elements are large, spindle-shaped, mononucleated, closely heaped or applied to each other, and without any intercellular tissue. The tumour is therefore a *spindle-celled sarcoma*.

27. The left foot showing the presence of a rounded ulcerating growth, situated on the inner aspect of the tarsus, and encroaching upon the sole. It involves all the soft parts in this situation, but not the osseous structures of the tarsus or metatarsus. It is soft in consistency, smooth and homogeneous on section, and, under the microscope, exhibits a very highly cellular structure. The cells are spindle-shaped, with large nucleolated nuclei, have no proper intercellular substance; no stroma. With these are round cells of the same character. There is no limiting capsule. The tumour or growth is a *spindle-celled sarcoma*.

Presented by Professor J. Fayrer.

23. Amputation of the right leg for a fungus-looking growth situated over the anterior and outer aspects of the lower third of the limb. It involves all the soft tissues, including the skin, and reaches the osseous structures below; is smooth and homogeneous on section; succulent and soft in consistency; highly vascular. Consists of small spindle-shaped cells, with round or oval, large nuclei; small round nucleated cells are also found, and in parts a development of very fine or delicate and immature connective tissue, but the great bulk of the growth is made up of spindle-cells, and it is evidently a *sarcoma* of this variety.

Presented by Professor S. B. Partridge.

29. "Large osteo-sarcoma of the right ulna. The bony shell of the tumour is deficient anteriorly, and so thin behind that it has been cut through in two or three places. Within is a cavity, the walls of which are lined by pulsatious matter. Case of Hari Sircar." (Colles.)

The morbid growth is a sarcoma. It consists of small, elongated, spindle-shaped and nucleated cells—closely packed together, with scarcely any intervening substance, and no true stroma. The

whole of the superior extremity of the ulna is implicated, and the tumour forms an irregular shaped mass as large as one's fist.

30. A preparation showing a large fungoid growth ($4\frac{1}{2}'' \times 3'' \times 1\frac{1}{2}''$); ovoid in shape, lobulated, and of soft consistency,—situated behind and to the right of the urinary bladder, which it separates from the rectum and levator ani. The tumour presses upon and causes a forward bulging of the posterior wall of the bladder, —above and a little to the right of the trigone.

Examined microscopically, the structure is found highly cellular,—consists of round and spindle-shaped nucleated cells, the latter predominating. The nuclei are large, and many double. There is a faintly granular intercellular substance, but no stroma. The growth is undoubtedly a *spindle-celled sarcoma*.

The preparation includes the bladder, urethra, rectum, and both kidneys of a native male patient (Denoo), who was admitted into hospital with a hypogastric tumour of six months' growth, and which first attracted his attention from causing a difficulty in voiding, and sometimes complete retention of urine. The mass, on admission, reached to two inches above the umbilicus, and "except that it was flatter and inclined towards the right side below, resembled an enormously distended bladder." The bowels were constipated. The patient passed urine in only small quantities. A large catheter could easily be passed down the urethra, but at first only evacuated from two to eight ounces of urine, and never appeared really to enter the bladder. Pus and blood came away with the urine; the latter in sufficient quantity to clog the catheter. The man eventually died of peritonitis.

On *post-mortem* examination, the bladder was found adherent to the linea alba, and distended with about 12 ounces of clear, not foetid, urine; no blood. "From the elevation of the *bas fond* so high in the abdomen, the fundus was obliterated, and the neck of the bladder stood at the lowest point of a funnel-like prolongation of the viscus." The mucous membrane was healthy. The urethra was also normal, until the prostatic portion was reached: from this part, which was somewhat dilated, "two passages led,—one, upwards and backwards to the left," where an abscess, containing about an ounce of pus, was found in the cellular tissue around the neck of the bladder; "the other, upwards and backwards to the right into the substance of the growth." * * * * "Through the passages above mentioned (evidently the prostatic ducts in an altered state), the pus and blood which passed on catheterism must have escaped. It is probable that when the lower funnel-like portion of the bladder leading to the neck was emptied by the catheter, the portion of the tumour which caused the posterior wall to bulge, became more prominent, so as altogether to cut off the greater portion of the bladder from the urethra, and prevent its being emptied." * * * * "The prostate was found softened,—almost diffuent. The rectum healthy. The kidneys showed expansion of their pelves and calyces, with corresponding atrophy of the secreting structure." * * * * "The peritoneum contained a considerable quantity of dark brown serum with flakes of lymph, and had patches of recent false membrane on it in several places." (Colles.)

Presented by Professor J. Fayrer.

31. "Large fibro-plastic tumour, removed from the outside of the left upper arm of a Mahomedan (Aga Alli), aged 28. It was subcutaneous. At one point had begun to ulcerate, and bled freely. Under the microscope, it consisted of nucleated cells, some oval, others fusiform, and by their aggregation producing

a fibrillated structure, which still falls far short of regular fibrous or connective tissue." (Colles.)

Re-examined microscopically, the tumour is found, as described, fibro-plastic, or, more correctly speaking, a *small-celled, spindle celled sarcoma*. (J. F. P. McC.)

32. An enormous lobulated tumour surrounding the lower two-thirds of the left femur, and involving all the soft parts down to and including the periosteum, but not the bone. The latter, as may be seen from the longitudinal section which has been made, is fairly healthy in structure. The consistency of the tumour mass is very soft, and its vascularity very considerable—(this has been well demonstrated by the artificial injection of the blood-vessels with red paint). Under the microscope the structure consists of round and fusiform cells, the latter predominating. They are from two to three times as large as blood-corpuscles, and each contains a well-developed nucleolated nucleus.—The growth is a gigantic *spindle-celled sarcoma*.

From a native male patient (Motee). The thigh was amputated at the hip-joint. The growth of the tumour "is said to have followed the prick of a thorn."

Presented by Professor J. Fayrer.

33. A small-celled, spindle-celled sarcoma ("fibro-plastic" or "recurrent fibroid" tumour), removed from "the foot of a European." It is ovoid in shape, about $3'' \times 2\frac{1}{2}'' \times 1''$; a portion of the skin adherent on one side. On section, it is smooth, homogeneous, soft in consistency, of a dull brownish colour. It consists principally of small, elongated or fusiform cells; numbers having bilid prolongations, or are tripolar or oat-shaped. They contain large nucleolated nuclei.

Presented by Professor J. Fayrer.

34. "A large fibro-nucleated tumour removed from the upper part of the left forearm. It was attached by a broad base to the cellular tissue among the muscles. The tumour is kidney-shaped, hard below and soft above; weighs $15\frac{1}{2}$ ounces. It was two years and a half growing, and had increased rapidly during the last twelve months." (Colles.)

The structure, under the microscope, is seen to consist of small spindle-shaped or oat-shaped nucleated cells, lying closely packed together, and only separable by careful brushing out of thin sections under water—(sarcoma.)

Presented by Professor J. Fayrer.

35. A tumour involving the lower third of the ulna, which portion of the bone has been excised *en masse*. The radius was not involved, nor the superjacent soft tissues. From a native male, aged 26. It is said to have commenced as a small localised swelling of the bone, 18 months ago. The lower third of the ulna presents a slightly nodulated appearance, and is expanded to the size of an orange. On section, the morbid growth is seen to have originated in the medullary canal or cancellous tissue, and to have increased so as to expand the bone around it, until it forms (see preparation) a kind of egg-shell covering or cyst

with very thin and brittle walls. The tumour tissue is soft, pinkish-white, infiltrates the bone very thoroughly, and even protrudes in parts through the osseous shell, so as to lie just beneath the periosteum. The latter is greatly stretched, but remains entire over the whole of the expanded shaft of the ulna.

The structure of the morbid growth is densely cellular ;—no intercellular “formed” tissue appearing even after repeated careful washing and brushing out of thin sections. The vast majority of the cells are small and spindle-shaped ; with these are mixed up small round cells, like granulation corpuscles, and a few large “myeloid” cells. The bulk of the growth, however, consists of small oat-shaped or fusiform cells, with single nuclei, heaped together without any intervening substance, except a little granular amorphous material. The tumour is, therefore, a true *small-celled, spindle-celled sarcoma*.

Presented by Professor S. B. Partridge.

36. A large fungating malignant growth involving the skin, subcutaneous soft tissues, and tarsal bones on the inner side of the left foot, and necessitating amputation at the lower third of the leg. The subject was a native male, aged about 50. The tumour had been growing rapidly for the last eight months.

It consists of an oval shaped ulcerated mass, about $2\frac{1}{2}$ " in diameter, with several soft, brownish-coloured (blood stained) nodules forming a kind of fungous protrusion from its surface. The internal cuneiform and base of the first metatarsal bone are implicated,—the former being hollowed out and carious. The other bones of the tarsus and metatarsus are found healthy on longitudinal section of the foot.

Examined microscopically, the growth proves to be a *small-celled, spindle-celled sarcoma*.

Presented by Professor W. J. Palmer.

37. A malignant tumour (sarcoma) of the left thigh, of five months' duration.—From a Mahomedan boy, aged 9 years. Amputation performed at the hip-joint. On a longitudinal section being made through the whole thickness of the bone, the morbid growth is seen to consist of a pinkish-white, somewhat soft mass, occupying its middle two-fourths. The superior and inferior epiphyses are not involved, nor the immediately adjacent portions of the shaft, though the cancellous tissue in these situations is abnormally vascular and friable. The true tumour-tissue seems to have developed from the medulla, filling and distending the canal, and then encroaching upon the compact tissue of the walls (shaft), so as gradually to destroy the osseous laminæ and reduce the bone to a mere shell. Here and there, isolated nodules of bone—which have apparently escaped disintegration—are found imbedded in the soft tumour-mass. The latter does not extend beyond the expanded shaft ; does not reach or infiltrate the muscles and other superjacent structures. The whole growth forms an oval-shaped tumour about 6" in length, $3\frac{1}{2}$ " in breadth, and 8" in circumference.

Examined microscopically, it consists chiefly of very small, narrow, spindle-shaped, nucleated cells, which lie close together, *i.e.*, without any formed intercellular substance. Some round cells are also found, and a few giant, multi-

nucleated myeloid cells, but small fusiform cells predominate, and the tumour is evidently a *spindle-celled sarcoma*.

Presented by Professor W. J. Palmer.

38. A large lobulated tumour, removed from the right submaxillary region of a native female, aged 30. The floor of the mouth was displaced upwards, and the lower border of the inferior maxilla, near its angle, was flattened and adherent to the growth. A portion of the superjacent skin, with three ulcerated openings, may be seen on one side of the tumour, the rest being invested by an imperfect and delicate capsule of connective tissue. It is soft, pulpy, brain-like in consistency; here and there blotched crimson or purple from blood-staining. Traces of glandular structure are found on microscopical examination, but the main bulk of the tumour consists of large spindle-shaped cells, with oval nucleolated nuclei, and a granular highly fatty protoplasm. With these are cells both oval and round, and also numbers of large, giant-cells (myeloplasts) with multiple nuclei, but the spindle-cells predominate. The growth is undoubtedly a *spindle-celled sarcoma*, originating in the submaxillary or other gland structures.*

Presented by Professor K. McLeod.

39. A malignant tumour of the right leg. The patient, a native male (Hindu), aged 25, weak and emaciated, "stated that about fourteen months ago he had a fall and injured the leg. The upper part of the limb inflamed, and a swelling, the size of a hen's egg, appeared in the course of a few days. He punctured this and then applied some "blue-stone." An ulcer resulted, but the swelling did not subside; on the contrary, it has increased rapidly, and has given great pain."

On the inner and anterior aspect of the head of the tibia, just below the knee-joint, there is a large fungating growth, which protrudes through and involves the skin, and had (in the fresh state) a bright pink or pinkish-yellow colour. On longitudinal section through the bone, the whole of the cancellous tissue of the head and about the upper third of the medullary canal are found occupied by the morbid growth, which has the same general appearance here as at the surface. It is very soft in consistency, and is composed (as seen under the microscope) of large round and spindle-shaped nucleated cells, with no formed intercellular substance; no stroma; and no capsule. The knee-joint is not implicated; but the deeper layers of the articular cartilage are found in a state of active proliferation, and thinned. The fibula remains healthy. The upper part of the medullary canal of the tibia is expanded. The medulla itself has a bright-pink colour, and is abnormally fatty. The growth is a *spindle-celled sarcoma* of the large celled variety. It has probably originated in the cancellous tissue of the head of the tibia or in the medullary canal, and, expanding the bone around it, has made its appearance

* This tumour recurred *in situ* in less than a month, and an exuberant nodule of sarcomatous growth in the cicatrix, together with the greater portion of the parotid gland which had become involved, were removed by a second operation. (J. F. P. McC.)

as a fungoid mass on the anterior and inner aspects of the leg,—the skin having ulcerated.

Presented by Professor D. O'C. Raye.

40. A tumour surrounding and involving the sheaths of the common carotid artery and its branches on the right side of the neck, and removed with these vessels *en masse*. It deeply infiltrated the surrounding and subjacent structures, and was said to be of eight months' duration.

The preparation exhibits an irregularly-defined growth, somewhat lobulated in outline. It embraces the carotid vessels, and appears to have originated in one or more lymphatic glands in this situation. A portion of the right lobe of the thyroid body, which seemed to be involved in the growth, was excised at the same time. The structure, microscopically, is that of *large spindle-celled sarcoma*—very rapidly proliferating. There are some round cells also, but the predominating variety is the nucleated fusiform cell, with markedly granular protoplasm, and no stroma or intercellular material, except, here and there, strands of fibrous tissue and lymphoid or glandular structure—disintegrating, or undergoing sarcomatous transformation. The sheath of the vessels (common trunk and external and internal carotids) shows similar changes, *i.e.*, distinct infiltration.

A portion of the internal jugular vein was removed with the tumour, and portions of the submaxillary and parotid glands. The pneumogastric nerve was cleanly dissected out, but left *in situ*. The patient, a native male (Hindu), aged about 40, survived the operation only a few hours.

Presented by Professor K. McLeod.

41. Melanotic sarcoma of the palm of the right hand. "A section shows the deep black colour of the substance of the growth." The tumour has the shape of a flattened sphere, and is the size of a small orange. It originates, apparently, from the true skin of the palm of the hand. On microscopical examination, the cutis vera is not simply hypertrophied, nor shows any splitting up into stroma, but, together with the subcuticular layer, is developed into a mass of large, elongated, spindle-shaped cells, with prominent oval nuclei. The majority of these cells contain dark pigment matter in granular form, affecting or infiltrating chiefly the protoplasm, but in many the nuclei also. There is no distinct intercellular substance. The consistency of the growth is soft. The structure, therefore, is typically sarcomatous,—the pigment being probably derived from the rete mucosum of the skin.

History.—"Bama, a Hindu servant, aged 26 years, was admitted into the Native or Chandnee Hospital on the 13th May 1864. She is a spare, healthy-looking young woman, and states that the disease commenced spontaneously four months ago, by a small vascular brown-looking painful tumour upon the middle portion of the palmar surface of the third metacarpal bone of the right hand. It gradually increased, and has now attained the size of a sliced apple, occupying nearly the whole of the palm of the hand. The

motions of the fingers are not affected. The stump healed up kindly, and the patient left the hospital with it perfectly cicatrized."

Presented by Dr. Herbert Baillie.

42. A melanotic growth (sarcoma) removed from the outer side of the left heel of a native male patient, aged 35. It is said to have been of two years' duration. The growth forms a flattened somewhat lobulated mass, $2\frac{1}{2}'' \times 1\frac{1}{2}'' \times \frac{3}{4}''$, involving the true skin and upper layers of the subcutaneous tissues. Examined microscopically, traces of degenerated epithelial scales can be found at the periphery, but the great bulk of the growth consists of small round and spindle-shaped nucleated cells,—the latter predominating. For the depth of about half an inch there is much dark granular pigment deposited within these cells; below this they are free from colouring matter, but are seen infiltrating the normal subcutaneous tissues in various directions. The tumour must therefore be regarded as a *melanotic spindle-celled sarcoma*, taking its origin or developing from the cutis vera of the heel of the foot.

Presented by Professor H. C. Cutcliffe.

43. Myeloid sarcoma. "Left forearm of Jhooloor, a Monda, aged 34,—amputated above the elbow for a tumour of twelve months' growth."

"The tumour involves the lower third of the forearm. Anteriorly, the skin has ulcerated and a large fungus protrudes. Posteriorly, over the lower end of the radius, the tumour forms a huge mass, larger than the clenched fist,—superficially hard and dense,—from the lower and outer end of which a soft fluctuating growth, the size of a small apple,—projects subcutaneously. On the lower and back part of this may be seen the mark of paracentesis performed before amputation, which only gave vent to blood." (A glass rod indicates the site of puncture.) "The radial artery was considerably enlarged in this case. The fingers were free, and there was but little pain, or affection of the glands."

"The tumour has been laid open, and the remains of the radius bisected from behind. A large cavity is now seen, with bony walls $\frac{1}{10}''$ thick, and continuous above with the medullary cavity of the radius, the lower end of which is expanded and softened, but has a defined edge which projects into the cavity of the tumour. The bony wall of the latter is deficient anteriorly, where it communicates with the fungating ulcer on the front of the forearm, and behind and externally (near where the styloid process should be) there is a small oval opening leading to the soft fluctuating tumour on the back of the wrist." (Colles.)

Examined microscopically, the structure of the tumour is highly cellular. The cells are small, round or angular, with large distinct nuclei; they lie close together, have no formed intercellular substance; and, with these, are large numbers of polynucleated giant-cells, giving a very characteristic and typical appearance to sections taken from various portions of the growth. The tumour is undoubtedly a *myeloid sarcoma*. (J. F. P. McC.)

Presented by Dr. Brownlow Hyatt, Ranehee, Chota Nagpore.

44. A myeloid epulis of the lower jaw. The growth involves a considerable portion of the transverse ramus, including the symphysis. This portion—extending from the first right bicuspid to the last left molar—has been removed with the tumour. The latter consists of two rounded, ridge-like eminences, with a deep furrow between them. The smaller, placed posteriorly, displays on section, a narrow ring of bone—(the expanded jaw), enclosing an opaque, dull-white, fibrous-looking substance. The larger and external or anterior prominence is purely fibrous-looking, and appears to be an expansion or development from the periosteum and gum.

On microscopical examination, the structure of the whole growth consists of small round and spindle-shaped mononucleated cells, intermingled with large giant-cells having multiple nuclei. There is no intercellular substance;—no stroma. The characters are those of true *myeloid sarcoma*.

The subject was a Hindu, aged about 60. He had enjoyed fairly good health to within the last six months. The tumour was of eight months' duration. It was first noticed as a small excrescence from the gum on the inner aspect of the symphysis, and had increased rather rapidly. The patient died from pyæmia, and the rest of the jaw was removed *post mortem*, and has been preserved with the morbid growth.

Presented by Professor J. A. P. Colles.

45. A myeloid sarcoma of the left forearm. From a native female, aged 25. The tumour is of eight months' growth. "It is said to have followed fracture of the bones of the forearm—the result of a fall." Was growing very slowly at first, and without pain, but latterly has increased rapidly and has been very painful. Amputation of the limb through the elbow-joint was performed; the greater portion of the flaps sloughed, and the humerus became exposed; the latter was resected, and fresh flaps constructed; these mostly united, but osteomyelitis of the humerus having been set up, amputation at the shoulder-joint had to be performed, and eventually the patient died of pyæmia.

The tumour is irregularly rounded, and slightly lobulated,—the size of a large orange. It is closely adherent to the skin, but has developed chiefly from the ulna, though implicating the adjacent margin of the radius also, and the surrounding soft parts.

Examined microscopically, exhibits numerous large myeloid cells with multiple contained nuclei, and a very large number of fusiform or caudate nucleated cells. These are massed together with very little or no intercellular substance. The growth is therefore a true sarcoma (myeloid.)

Presented by Professor H. C. Cutcliffe.

46. A myeloid tumour removed from the left side of the upper jaw of a native male, aged 50.

The tumour came away pretty readily, and did not seem to infiltrate the surrounding soft structures to any appreciable extent. It equals in size an orange, and has an irregular nodulated surface. When fresh, the section presented a glistening, semi-transparent

appearance, but with numerous minute ecchymoses and blotches of blood, of pinkish and purplish tinge. The lobules of which the growth is composed are united together by very delicate fibro-cellular tissue, and the entire mass invested by a moderately dense capsule of the same structure. The consistency is very soft.

Under the microscope, the growth is seen to be composed of small round and angular cells, with single, distinct, large-sized, nucleolated nuclei; and numerous brood cells, having a finely granular protoplasm, and containing ten, twenty, or thirty large round nuclei (myeloid cells). Very little inter-cellular material exists, and that is chiefly granular and soft, except in the neighbourhood of the fibrous partitions which surround and separate the several nodules of which the tumour at its periphery is composed;—here, delicate connection tissue fibres, diverging or radiating from the capsule, can be traced for a short distance into the tumour-substance. These bands are dotted with atrophied round or angular cells, free nuclei, and fat globules and granules. The growth is a very excellent example of a myeloid sarcoma.

Presented by Professor H. C. Cutcliffe.

47. Myeloid tumour of the upper jaw. From a native boy, aged 11 years. "It is of about 18 months' growth, and appeared at first like a pea at the inner aspect of the upper lip. Increased slowly until the last six months, during which period its increase has been rapid and very painful."

The preparation consists of a portion of the alveolar border of the right superior maxilla, and the anterior half of the hard palate. The growth involves the whole of the former, developing apparently from the gum, and has made its way upwards and outwards into the nostril and antrum. It is markedly lobulated, has a smooth but mottled surface, a thin delicate capsule of connective tissue, and on section is soft and variegated in colour, —in parts yellowish-white, in others pinkish and purplish from blood-staining.

Under the microscope, the structure is highly cellular. The cells are round and spindle-shaped; the former about twice the size of a blood-corpuscle, the latter larger. All possess distinct, nucleolated nuclei of considerable size. Amidst such cells are a great many myeloid or giant-cells, polynucleated, and of various shapes, with many-tailed processes or prolongations. These give the characteristic type to the growth, which is undoubtedly a *myeloid sarcoma*. The capillary vessels are numerous and thin-walled.

Presented by Professor D. O'C. Raye.

48. A large fungating tumour of the testicle.—The superjacent skin is ulcerated and the growth protrudes in several places. The peripheral portion of the tumour is soft and spongy in character; towards the centre are a few nodules, very dense, fibroid, and even cartilaginous in character.

Under the microscope, the structure of the growth is mixed or complex. The tubuli seminiferi are found either entirely collapsed and disorganised, or, in other parts, much dilated, their lining epithelium in a state of proliferation, and even forming small nests towards the centres of some tubules, from mutual compression. External to the tubules, and comprising the great bulk of

the diseased mass, is a very abundant round-celled nucleated growth. In parts again, the structure is purely fibrous or fibroid,—consisting of closely interlacing bands of connective tissue; and lastly, here and there, small nodules of true cartilage are found. The tumour is probably, therefore, a *mixed sarcoma*. No history.

Presented by Professor Allan Webb.

49. A large lobulated tumour removed from the upper part of the popliteal space of a Hindu male, aged 30. It has an imperfect capsule of fibrous tissue. On section is soft, in parts creamy, in others has broken down to form pseudo-cysts. Its structure, under the microscope, consists of small round and fusiform cells, with bright transparent nuclei,—the lobules connected together by a variable amount of fibrous tissue. In parts, the elements are strictly round, or but slightly oval, and contained in a small-meshed stroma, indicating true lymphoid tissue; in others, this reticulum is lost, the cells exist without any intervening formed tissue, are extremely numerous, and exhibit a tendency to become fusiform or spindle-shaped. The growth is therefore a *lympho-sarcoma*, or a sarcoma that has had its origin in the normally existing lymphatic glands of the popliteal space.

The growth recurred in less than four months, necessitating amputation of the thigh at the middle third.

Presented by Professor J. Fayrer.

50. A fibro-sarcomatous tumour, removed from the right scapular region of a native female, aged 20. The tumour is oval in shape, about the size of the foetal head. It has a well-formed capsule of connective or fibrous tissue, and was situated quite subcutaneously over the right scapula,—loose areolar tissue in considerable quantity intervening between the tumour and the infraspinatus and latissimus dorsi muscles. There was no distinct pedicle, but several large blood-vessels were found ramifying over the surface of the capsule, and (with some stronger strands of fibrous tissue) were particularly developed at the posterior inferior aspect of the growth.

On section the tumour has a lobulated appearance; is moderately firm in parts, in others is succulent from free infiltration with a mucilaginous, sticky material; and at one end there is a portion which presents unusual softness, and a pinkish or creamy-yellow colour, due evidently to hæmorrhagic and mucoid changes. This portion can be almost “shelled out” of the rest of the tumour.

Under the microscope, the structure is seen to consist of closely packed white fibrous tissue, very densely infiltrated with minute fatty granules and globules, and also with glistening mucoid material. The softened portion above described shows an abundance of small round and spindle cells and yellowish pigmented corpuscles (blood cells), also much free fat and mucus. This portion of the tumour, therefore, is of suspicious structure, though the greater bulk of the growth appears to be fibroid.

Presented by Professor K. McLeod.

51. This preparation illustrates the recurrence of the tumour above described,—removed seven and a half months after the first operation. It had reappeared near, and partially involved, the cicatrix left by the latter.

It is seen to consist chiefly of two rounded masses, separated from each other by a considerable thickness of normal loose connective tissue. The larger of the two is hollowed out at its centre from mucoid softening. Both growths implicate, to but slight extent, the superjacent skin.

Examined microscopically, the structure is much the same as that of the primary growth, only that the fibrous tissue is less firm—more frayed out, and freely infiltrated with glistening mucoid material. With this kind of myxomatous tissue are intermingled numbers of very small, delicate, spindle cells, having distinct rounded nuclei, and also small round cells—the size of white blood-corpuscles. The tumour has therefore a more pronounced sarcomatous structure, and it is interesting to note how the the firm fibrous tissue of the primary growth has degenerated, as it were, into mucoid tissue in the recurrent tumour. There is, however, still no marked infiltration of the surrounding structures,—the skin being only involved along the cicatricial line of the first operation, and the two main lobules of which this growth is composed are well defined and circumscribed.

52. Tumour removed from the back of a native male patient, aged 45.

“It is of 25 years’ growth, and was situated at the lower part of the dorsal region, exactly in the median line, covering the spinous processes of the last five dorsal vertebræ, and beneath the skin. The latter was thickened and tuberculated. The tumour was movable, and had a tense elastic feel. The cervical and inguinal glands of the left side were much enlarged. There was no history of a fall or of any local injury.”

The tumour is kidney-shaped; has a distinct, but not easily separable, capsule of connective tissue. On section, is somewhat soft and succulent, but not friable. About one-half has (in the fresh state) a pearly-white glistening appearance, the rest is dull-red, and exhibits the open mouths of groups of dilated capillary vessels. The paler portion consists of very delicate nucleated connective tissue, and is sparingly vascular. The reddish stained portion is made up of round and fusiform cells of small size with solitary large nuclei, lying very close together, or separated by imperfectly fibrillated tissue. This portion is highly vascular—the blood vessels are large, dilated, varicose, and in parts so closely grouped that a kind of *cavernous* arrangement or structure is displayed. The tumour is, therefore, a *mixed sarcoma* or *fibro-sarcoma*. The change from a comparatively simple (fibrillated) to an almost purely cellular (embryonic) tissue is marked and abrupt. Here and there mucoid degeneration of the cell elements is also observed, and the presence of small sanguineous cysts.

Presented by Professor K. McLeod.

53. Preparation showing the recurrence of the growth above described after an interval of about ten months. It is partly nodular, partly infiltrative, and involves the cicatrix left by the first operation.

The largest nodule is the size of a walnut, and consists, under the microscope, of spindle cells closely grouped together, or in parts forming an immature fibrillated tissue which is abundantly nucleated. The vascular supply is very considerable. The structure is strictly *sarcomatous*.*

54. "A fibrous tumour removed from a patient in the Medical College Hospital. It is about the size of a small orange. Its outer layer is made up of dense, opaque, unyielding fibrous texture, and measures three-quarters of an inch in thickness. The interior of the growth consists of coarser fibrous tissue." (Ewart).

The section made through the growth displays very characteristically its dense fibrous structure, which is confirmed on microscopical examination,—the tumour substance consisting entirely of very closely interlacing strands of connective or white fibrous tissue. (J. F. P. McC.)

Presented by Dr. J. Fayrer.

55. A large fibroma showing central softening and the formation, in consequence, of pseudo-cysts. The main growth is very firm, and consists of closely-woven nucleated connective tissue, the filaments of which interlace in all directions in an irregular manner. There is a well-defined fibrous capsule, which has been peeled off portions of the tumour, but in other parts remains attached and very distinct. No history.
56. A huge fibroma of the lower jaw, with four teeth imbedded in it. The tumour is surrounded by a thin osseous shell—the expanded outer lamina of the jaw. On section, the tumour tissue is very firm and condensed—distinctly fibroid-looking, and microscopically, is found to consist of very fine white fibrous (or connective) tissue, closely interlaced, and throughout very firm and rigid. Here and there a small nodule of cartilage is encountered, but the main bulk of the growth is purely fibroid.

* The subsequent history of this case is interesting, and seems worthy of record. The last operation was performed on the 8th July 1881, but the wound granulated very slowly, and the patient suffered intensely from shooting lancinating pains in the lower limbs. This culminated in complete paraplegia on the 2nd of October. Bed-sores now formed over the sacrum, the wound became sloughy, the patient extremely depressed, occasionally delirious: intractable diarrhoea set in, and he died thus exhausted on the 7th October. After death it was found that a recurrent sarcomatous nodule in the wound had made its way into the spine, the eleventh dorsal vertebra being almost entirely absorbed, and the cord and membranes compressed and much softened at this spot. The latter were, however, unbroken. The softening extended to the cauda equina. The upper half of the twelfth dorsal vertebra was converted into firm, but lardaceous-looking material, having a glistening, pale-yellowish appearance. The first lumbar vertebra was healthy, the second completely transformed into the same substance as above noted. The third lumbar was again free, but the fourth and fifth were morbidly affected, and much flattened from above downwards. None of the intervertebral cartilages were involved. The changes referred to were very peculiar. No reproduction of specific, *i.e.*, sarcomatous structure, was discovered (on microscopical examination), except in the soft parts in the immediate vicinity of the destroyed vertebra (eleventh dorsal). The glistening lardaceous material into which the bodies of the other vertebrae had been partially or wholly converted was purely *fibroid*, *i.e.*, consisted of closely-meshed white fibrous tissue, firm and tough, swelling up on the addition of acetic acid, and then displaying numerous small nuclei, but no proper *cell* elements, and nothing approaching to sarcomatous transformation. The change seems to consist essentially of a dissolving out or deprivation of the mineral or earthy matter of the bone, with its reversion to a prismatic fibroid tissue, either wholly or in part;—decalcified bone, nothing else abnormal is discoverable. In both lungs and in the liver small ill-defined sarcomatous nodules were found, but these also exhibited an unusually firm consistency and fibroid structure; the cell elements—round and spindle-shaped—being but few in number and of small size. (J. F. P. McC.)

57. Another very firm and dense fibroma of the lower jaw. The tumour is the size of a large orange. Six teeth can be seen imbedded at one portion. It has a well-defined, slightly lobulated outline, and a capsular investment partly fibrous partly bony. Like the preceding tumour, it seems to have developed from the interior of the jaw, expanding the bone around it; and its microscopic structure is also almost identical—consisting of fine, closely interlacing filaments of white fibrous tissue, with here and there a small nodule of cartilage.
58. A very firm hard fibroma, involving the right-half of the lower jaw. Several teeth are seen still imbedded in the growth, but much displaced. The outline is lobulated. The cut surface smooth and almost homogeneous. Very closely-woven and condensed white fibrous tissue composes the structure of the growth, as seen under the microscope.

Presented by Professor S. B. Partridge.

59. A very firm, whitish, somewhat reniform tumour, with a single incisor tooth projecting from one portion of it, and said to be “a scirrhus tumour removed from the upper jaw.” (Ewart.) On section it is remarkably dense and fibrous-looking, the fibrillæ having a somewhat concentric arrangement. The outline of the tumour is lobulated; it cuts like cartilage, and is also gritty—as if particles of bone were imbedded in the tumour tissue. This is confirmed on microscopic examination,—the structure consisting entirely of white fibrous tissue, with here and there minute particles of imperfectly formed bone. There is no abnormal cell growth, no cancerous development; the tumour is a *simple fibroma*.
60. Amputation of the right hand (with the exception of the thumb and index finger) for a tumour situated on the posterior aspect of the metacarpal bones of the ring and little fingers, and ulcerating through the skin.
- The growth is oval in shape; slightly nodulated in outline; the size of a large orange. It is very firm and fibrous-looking on section, and has originated apparently from the sheaths of the extensor tendons on the back of the wrist and hand. The structure, microscopically, is purely fibroid—consisting of closely intersecting bands of well-formed fibrous or connective tissue, interspersed with minute nuclei. No other new or morbid growth.
- The tumour is described as a “fungus hæmatodes.” (Ewart.) Though the skin over it is ulcerated, and a sinus an inch in length leads into the substance of the growth, there is nothing malignant in its general structure.
- The subject was a native male, aged 42. “A small hard incompressible tumour, the size of a filbert, had been excised from the region of the metacarpal bone of the ring finger, three years before. The constitution of the patient suffered greatly from the unhealthy, ichorous, and sanguineous discharge.” The ultimate result of the operation is not recorded.
61. A fibroma removed from the inside of the mouth. The surface is smooth; slightly lobulated; the consistency very firm and dense;

and the cut surface has a distinctly fibrous appearance. Under the microscope, consists of wavy white fibrous tissue, in parts very closely interwoven, in others infiltrated with small nuclei, and exhibiting also a few elastic filaments.

62. A very firm lobulated fibroid growth (epulis), with a portion of the alveolar border of the lower jaw, and a couple of imbedded incisor teeth.

"The growth was of seven years' standing, and occurred in a middle-aged coolie. It commenced with a small excrescence on the gum, and gradually increased until it perforated the muscles and skin of the cheek, where a large ulcerated surface was exhibited. Part of the ascending ramus of the jaw was expanded and hollowed out. The inferior dental artery supplying the growth was much larger than natural. The operation for extirpation was completely successful. The wound healed up rapidly, and left very little deformity." Microscopically, the tumour is composed of white fibrous tissue, some of it well developed, but much still in a transitional condition, soft, and abundantly nucleated. It contains several large blood-vessels.

Presented by Dr. Simpson.

63. "Fibrous tumour developed within the ramus of the lower jaw, which is dilated into a bony shell, completely enclosing it. At one point, where a glass rod has been inserted, the line of demarcation between the tumour and its bony shell may readily be recognized. The growth shows nothing,—under the microscope,—but dense white fibrous tissue." (Colles.)

Presented by Dr. Herbert Baillie.

64. "Fibrous tumour of the dura mater. It pressed on the upper surface of the left cerebral hemisphere, and depressed the brain below into a deep cup. From a subject in the dissecting room." (Colles.)

The tumour, which is firmly fixed to the inner surface of the dura mater, is as large as a nutmeg, consists of fine fibrous tissue, with a considerable admixture of elastic filaments; and is interspersed with numerous opaque cretaceous granules and corpora amylacea.

65. Two small fibroid growths removed for the second time from the lobules of both ears,—similar growths having been excised one year previously. From a native boy, aged 11 years. The structure, under the microscope, consists of very delicate nucleated connective tissue.

Presented by Professor J. Fayer.

66. A small dumb-bell shaped fibrous tumour "removed from the ear of a boy aged about 12. It had been growing for the last five years, being the result of piercing the ear,"—(the lobule, probably, for an ear-ring). "On microscopic examination it consisted of fibres, a few nuclei, and granular matter." (Ewart.)

67. A firm, fibroid tumour, removed with a portion of the left upper jaw "from a native lad, about 25 years of age." Two incisor teeth are imbedded in the growth anteriorly, and a molar lies partly detached with a piece of the alveolus at the posterior

aspect of the tumour. Under the microscope, the structure consists of fine, closely-woven, nucleated, fibrous tissue, which in several places is developing into bone—islets of imperfectly formed osseous tissue being found abundantly distributed in every section made for examination.

Presented by Professor J. Fayrer.

68. "A fibrous tumour removed from the mouth of a woman, aged 55. It began seven years ago as a small nodule springing from the alveolar process of the right upper jaw, and gradually increased, until in five years it almost completely filled the mouth, and greatly distended the cheek. For the last two years it had enlarged externally only;—a mass the size of a hen's egg having protruded from the mouth." * * * * *
 "For these two years she has been unable to take any solid food. The teeth of the lower jaw were much displaced, and the alveolar process of the superior maxilla almost entirely absorbed."
 * * * * * "The tumour has been painless throughout, until a fortnight ago, when inflammatory action began in the external lobe, but it has caused toothache and earache at times from pressure."

Examined microscopically, the growth consists of dense, closely interlacing bands of white fibrous tissue, very firm and rigid, sparingly nucleated, and sparingly supplied with blood-vessels. Towards the surface it is papillated, and invested by the common mucous membrane of the mouth;—a *simple fibroma*.

Presented by Dr. R. Harvey, Presidency Surgeon, Bhurtpore.

69. "Large fibrous tumour involving the right half of the lower jaw. It appears to have sprung originally from the periosteum, but much of what forms the tumour is hypertrophied gum. The lower portion is covered with a bony shell. The jaw was excised from the left second molar to the angle, and the right ramus then dissected out. (It has now been re-attached to the rest of the specimen). The patient, a Musalman, aged 25, made a good recovery. The tumour had been growing for five years. The microscope shows nothing but white fibrous tissue." (Colles.) See also *Indian Medical Gazette*, July 1866, page 182.

Presented by Dr. W. B. Beatson, Mitford Hospital, Dacea.

70. The left superior maxilla removed on account of a *fibroid* tumour, which had developed, apparently, in the antrum. "It commenced about two years ago, and was progressing slowly, but about four months ago a portion of the growth which projected from the nose was sliced off by a native practitioner, and an escharotic applied. Since then the tumour has rapidly increased, and sent prolongations in various directions—upwards into the orbit, forwards into the left nostril, backwards through the posterior nares into the pharynx—bulging down the hard palate, and thus producing great deformity."

Under the microscope, the growth is found to be purely fibroid,—consists of white fibrous tissue, in parts freely nucleated, and some elastic filaments, but no other form of new cell growth, and nothing approaching to malignant structure.

Presented by Dr. W. E. Allen.

71. Fibroma of the upper jaw. "The growth filled the mouth, projecting between the teeth. It had originally sprung after the removal of a tooth—probably the right upper canine—from the alveolar process. Age of the growth upwards of two years. Was removed by an incision through the upper lip and into the right nostril; this afforded space for cutting pliers, and the resection of the portion of the alveolar process to which the mass was attached."

The tumour is about the size of a small orange; broadly and irregularly lobulated; surface smooth and generally rounded. Two teeth (one a bicuspid the other a molar) are half imbedded in the growth, and a portion of the gum and alveolus of the jaw also remain, the latter being almost completely surrounded by the tumour. The growth presents a dense-white, fibrous appearance,—the arrangement of the fibres being irregular, interlacing with each other in various directions, and most closely at the periphery,—the most compact and firm part. The fibrillæ are glistening-white and delicate.

Under the microscope, the tumour presents (in thin sections) numerous delicate intersecting bands of white fibrous or connective tissue, intermingled with which are nuclei, and caudate and stellate connective-tissue cells; here and there a small piece of cartilage and bone. No myeloid cells exist. The growth is therefore an almost purely *fibrous tumour*, and constitutes a variety (the non-myeloid) of *epulis*.

Presented by Dr. James K. Jackson, Civil Surgeon, Mynpoorie.

72. A fibroid tumour, weighing 3lbs. 14 ozs., removed from the left thigh of a native boy, aged about 16. It was said to be of 12 or 13 years' growth. The tumour is ovoid in shape, has a broadly lobulated outline, and firm but elastic consistency. It is invested by a thick fibrous capsule, upon which blood-vessels ramify,—some of very large size. On section, a dull-white, more or less homogeneous appearance is presented, and the lobulated character of the growth well displayed. The central portions have undergone softening and pulpification. Numbers of enlarged lymphatic glands were found filling Scarpa's triangle, but not directly associated or connected with the tumour. These were excised at the same operation, and are preserved with the principal growth.

Under the microscope, the central portions of the tumour present nothing but a granular, amorphous, fatty *débris*, and a few small shrivelled cells; towards the periphery the growth has a very finely fibrillated structure,—the fibrillæ interwoven very closely, and exhibiting numerous minute nuclei on the addition of acetic acid. The vascular supply is not abundant, and is chiefly confined to the capsule.

The lymph-glands are dense and firm; show great overgrowth of their fibrous dissepiments (parenchyma), with shrinking and atrophy of the lymph cells, and considerable caseation towards their central portions.

The tumour seems to be a *fibroma* of the firmer or denser (homogeneous) variety.

Presented by Professor W. J. Palmer.

73. Tumour excised from the abdominal wall of a native male, aged 40. The growth was of eight years' duration. A portion of the skin has been removed with the tumour, which is ovoid in shape; the size of a large orange; slightly lobulated; smooth and homogeneous on section; and of a dull-white colour. It has a delicate but well-formed capsule of connective tissue. Under the microscope, the growth is found highly cellular,—the cells small, spindle-shaped or round, but combined to form fasciculi of various sizes, which interdigitate with each other, or have a more distinctly concentric arrangement, *i.e.*, immature fibrous tissue. The tumour is a *fibroma* of the *cellular* variety, or a so-called fibro-cellular growth.

Presented by Professor Gayer.

74. Fibroma of the lower jaw; said to be of about three years' growth. "It first appeared as a small nut-like swelling on the outer aspect of the gum, opposite the left lower molar teeth. For twelve months increased very little in size, but during the last two years has made more rapid progress." From Bhipro, a Hindu, aged 20.

The growth involves the whole of the left half of the jaw, and extends a little beyond the symphysis. The bone has been divided half an inch beyond the latter, and disarticulated at the left condyle. The tumour is massive, very solid to the feel, convex, rounded, and for the most part smooth externally, and flattened on its inner aspect, thus closely following the conformation of the jaw. On longitudinal section the structure is found firm but elastic, more or less homogeneous, and of a creamy-yellow colour. The bone has been enormously expanded by the tumour, which has evidently originated in its interior. Only a narrow rim or shell of osseous tissue now surrounds the growth on its inferior and lateral aspects, while superiorly, the alveolar margin has been completely absorbed,—the tumour here projecting into the mouth, and being covered by thickened mucous membrane.

On microscopic examination, the structure consists of nucleated white fibrous tissue, not perfectly developed, *i.e.*, not forming filamentous bands or bundles, but a kind of intricate mesh or network. Here and there a few cartilage corpuscles are seen scattered, and small islets of bone also, but the main bulk of the growth is purely fibrous, and the tumour is a true *fibroma* of the jaw.

Presented by Professor S. B. Partridge.

75. Fibrous tumour of the lower jaw excised with a portion of the bone. It is said to be a growth of two years' duration, and "first appeared as a pimple near the right angle of the lower maxilla. Has increased slowly and without pain." The tumour is ovoid in shape, and has a thick capsule of connective tissue, apparently continuous with the original periosteum of the jaw, from which the growth has evidently developed. The portion of this bone excised with the tumour consists of the right half of the horizontal ramus, from the symphysis to the angle. The growth surrounds the bone,—with the exception of the alveolar margin and teeth,—but has developed chiefly outwards and down-

wards. On section, it is very firm and dense, has a pearly-white, lustrous appearance (in the fresh state), and is distinctly fibroid looking. This is confirmed on microscopical examination,—the tumour structure consisting of white fibrous tissue forming intricate interlacements, and plentifully supplied with rounded or angular nuclei—a *simple fibroma*.

Presented by Professor K. McLeod.

76. Tumour removed from the left buttock of an adult European (male). “Its duration is said to have been about six years. It grew over the soft parts covering the left tuber ischii, and did not infiltrate any of the neighbouring or subjacent tissues. The skin over it was freely movable. The patient has another tumour of the same size, situated at an almost exactly similar position on the right buttock.” The tumour consists of two separate and distinct nodules,—one rather larger than a hen’s egg, the other the size of a nutmeg. They are both encapsuled, and connected together by a little loose fibrous tissue. The smaller growth is exceedingly hard and dense—cutting like cartilage. The larger one is also very firm and resistant at the periphery, softer and more succulent towards the centre. Their structure is identical, consisting (under the microscope) of fibro-cellular tissue, *i.e.*, white fibrous tissue abundantly nucleated, and forming very closely-woven intersecting bands. With this there is an unusual amount of elastic tissue, and, where the larger growth shows comparative softness of texture, much *mucoïd* metamorphosis of its constituent fibrillæ. Essentially, the tumour is a subcutaneous *fibroma*.

Presented by Professor K. McLeod.

77. “Painful subcutaneous tumour or tubercle” of seven years’ duration; removed from the inside of the right arm of a Hindu, aged 50. It was “soft and fluctuating to the feel, very tender, and subject to periodic exacerbations of pain.”

Examined microscopically, the little growth consists, principally, of white fibrous tissue forming closely-packed filaments, with here and there elastic fibres, and, in parts, delicate nerve fibrils;—the implication of which may perhaps account for the painful character of the tumour.

Presented by Assistant Surgeon Odoy Chand Dutt, Pooree.

78. A small parotid tumour, from a native male patient, aged about 25. It originated as a hard nodule in the right parotid region, and is stated to be of two years’ standing. The growth is lobulated, ovoid, the size of a hen’s egg. It possesses a distinct capsule, over which minute vessels are found ramifying, and passing inwards into the substance of the tumour upon fibrous dissepiments which intersect it in various directions. The structure (under the microscope) is fibro-adipose,—both white and elastic fibro-cellular tissue and much fat constituting the whole mass of the growth. No cartilage or gland cells are visible,—the tumour is a *fibro-lipoma*.

Presented by Professor S. B. Partridge.

79. "A congenital tumour, removed from the right foot of a native male patient aged 40. It is oval in shape, about $3'' \times 2'' \times 1\frac{1}{2}''$. Has no distinct capsule. On section, is very firm and dense. Has an opaque-white colour, and fibroid appearance. The fibrous fasciculi intersect each other in various directions, and in parts form bundles of considerable size. Under the microscope, the structure is seen to consist of highly nucleated fibrous or connective tissue, intermingled here and there with *smooth muscular tissue*. Blood-vessels of considerable size are also found permeating the substance of the growth freely. The little tumour is a *fibro-myoma*.

Presented by Professor S. B. Partridge,

80. Fibro-cystic tumour of the lower jaw. It is said to have been growing for three and a half years, and the patient, a Hindu, aged 40, associated its development with an injury to the part, viz., a kick from a horse.

Almost the whole of the lower maxilla appears to have become involved in the growth, which seems to have originated within the bone, and to have expanded and hollowed out its structure. It forms thus a broadly lobulated mass of crescentic shape, following closely the outline of the jaw. Covering the upper surface is the greatly thickened mucous membrane of the mouth, elsewhere the thinned and stretched periosteum of the bone. Even from the exterior the tumour looks cystic, and on palpation crackling and fluctuation are elicited over certain parts. The cystic change is, however, best observed in the longitudinal section of the growth which has been made:—the whole mass consisting of larger and smaller cavities (varying in size from a pea to a walnut), with portions of semi-solid tissue between them. The cysts contain fluid which is thin, dark-red, and truly sanguineous, or yellowish-brown and oily-looking. The partitions between them are composed chiefly of osseous tissue, but here and there combined with softer, fibrous-looking or even quite pulpy material. Such softer portions of the growth, examined microscopically, consist principally of broad bands of white fibrous tissue, closely and intimately interlacing with each other. In parts this tissue is replaced by a more fibro-cellular growth, or even by small portions of newly-formed bone and cartilage. The greater portion, however, of this softer tissue is decidedly fibrous, and the growth may therefore be regarded as a true fibro-cystic tumour of the jaw.

The patient died on the table a few minutes after the operation (removal of the whole jaw with the tumour) had been completed. Artificial respiration and all other means were attempted, but failed; the breathing had somewhat suddenly ceased, and could not be re-established. On *post-mortem* examination (about seven hours after death), the trachea close to its bifurcation, the bronchi, and almost all their branches, were found filled with partly coagulated, partly frothy fluid blood. The posterior halves of both lungs were collapsed and destitute of air, the anterior portions emphysematous. The right side of the heart was loaded with very dark fluid blood, the left empty. All the abdominal organs showed marked venous congestion, and so did the membranes of the brain. There was no blood in the stomach.

The cause of death was therefore, evidently, asphyxia from the trickling downwards into the air passages of blood from the mouth during the operation, until the bronchi became so blocked that respiration could no longer be carried on. The heart looked healthy, but, under the microscope, showed marked fatty metamorphosis of the muscular tissue (of the left ventricle in particular).

Presented by Professor S. B. Partridge.

81. A tumour removed from the right great toe of a native male patient; "said to be a growth of about seven years. The inguinal glands were slightly indurated."

The tumour is as large as an orange. It involves the lower third of the metacarpal bone and both phalanges of the great toe,—developing apparently from the periosteum investing these bones. It forms a rounded, more or less smooth swelling over the dorsal and inner aspects of the toe. The epidermis is slightly thickened, the cutis vera considerably so. There is no distinct capsule. On section, the growth is soft and succulent, in parts opalescent and jelly-like, in others curdy and opaque. The osseous tissue of both phalanges is earious and very soft, but the bone is not enlarged or expanded, and seems merely to have suffered from the pressure of the new growth—(affecting its nutrition), *i.e.*, shows no infiltration, &c.

On microscopic examination, the structure of the tumour consists of a delicate fibrous reticulum, with large, mostly rounded meshes, filled with glistening mucoid material, amidst which numerous angular, elliptical, and stellate cells can be recognised, many of them grouped together by means of long-tailed anastomosing processes. These are nucleated and almost all infiltrated with mucoid. In other parts, the connective tissue framework is dotted over with only small round cells and nuclei;—is soft, and evidently proliferating. A good deal of elastic tissue is also distributed throughout the growth. The tumour is a true *myxoma*.

Presented by Professor S. B. Partridge.

82. The anterior portion of the skull showing a polypoid tumour involving both nares, and which projected backwards into the pharynx. It has also perforated the cribriform plate of the ethmoid, and thus entered the cranium. Acute meningitis with the formation of a small circumscribed abscess in the right anterior lobe of the brain was the result, and led to a fatal issue. The patient was a native male, aged 25. He had been operated upon for a nasal polypus three months previously, the growth being removed by evulsion. After this he suffered from repeated epistaxis, and the polypus began to grow again. Was kept under observation, and the hæmorrhage from the nostril controlled by plugging. Head symptoms soon developed;—he became restless, convulsed, and at last insensible, and thus died. The exact condition of parts was only discovered *post mortem*, and is exhibited in this preparation.

The portion of the growth in the nares and pharynx (really the pedicle of the polypus removed during life) is about the size of a walnut; that which has penetrated the skull is a little larger. Both portions are very soft, and of a greyish-pink colour. Their structure is identical:—consists of very delicate intersecting

fibrillæ of soft gelatinous-looking connective tissue (from free infiltration with mucoid globules). The cell elements are few in number, irregularly distributed, stellate or caudate, nucleated, and also mucoid. The growth is, therefore, a *myxoma* (or fibro-myxoma), and although histologically an innocent tumour, has proved fatal from the progressive implication of important structures.

83. A small polypus, removed by evulsion from the posterior nares. The growth is pear-shaped, but flattened. The pedicle is rounded and firm. The surface smooth, but blotched. On section, the structure is fibroid—fine white lines or streaks intersecting the basis-substance in all directions. Thin sections placed in water swell up, and become very soft and gelatinous. Under the microscope, a flickering and soft (evidently mucoid) basis-substance is seen, plentifully infiltrated with cell forms, which are mostly angular or stellate and nucleated. Among them are rounded, smaller corpuseles—obviously blood-cells, both white and red. The basis-substance is not homogeneous; in parts it is fibrillated, and forms spaces or alveoli of rounded or oval outline. These alveoli are filled with mucoid material and cells of the same kind as just described. Blood-vessels are plentiful, and here and there small sanguineous cysts are also found. The entire structure is purely *myxomatous*.

From a native male out-patient, aged 22.

Presented by Dr. E. Lawrie.

84. Fibro-myxoma from the parotid region—a growth of “upwards of seven years.”

The tumour is ovoid, three inches in length, and about an inch and a half in breadth or thickness. It has a distinct but delicate capsule of condensed connective tissue. Blood-vessels very few. Surface much lobulated.

The structure, under the microscope, is seen to consist of fine fibrous tissue, the fasciculi of which are closely interlaced, and show much fatty metamorphosis. This constitutes the bulk of the tumour; but, in parts, large stellate cells are found, having single or double nuclei, and freely infiltrated with *mucoid* material. Here and there, also, a few cartilage corpuseles are observed. The connective tissue of the growth is throughout abundantly nucleated.

85. A small fibroid growth from the inner surface of the dura mater. It is attached to the right side of the falx cerebelli. From a native female, aged 50, who died of pyæmia.

The growth is about the size of a nutmeg; slightly oval; surface smooth, and covered by a layer of flattened epithelial cells, resting on a delicate but distinct basement membrane, which is plentifully supplied with small capillary blood-vessels. The tumour is moderately firm in consistency, and of a glistening-white colour on section.

On microscopic examination, its structure consists of soft broad bands of white fibrous tissue, (much of it in the form of undeveloped or imperfectly

developed connective tissue), numerous nuclei, and stellate cells having mucoid contents. The little growth is therefore a *fibro-myxoma*.

86. Two enormous labial tumours and the hypertrophied clitoris, removed by one operation, from a Mahomedan female, aged about 25.

"The patient has been subject to malarious fever from time to time. She has no children, nor has had any miscarriages. Menstruation regular. The morbid growth is said to be of about a year's duration." The preparation exhibits two ovoid growths, each as large as the adult head,—consisting of the hypertrophic labia, with an intermediate irregularly lobulated mass—the "elephantoid" clitoris and prepuce.

One of the labia has been bisected to show its structure. This is seen to consist of a highly gelatinous or mucoid tissue, *i.e.*, loose connective tissue, freely infiltrated with flickering, opalescent, mucoid material. The peripheral portion of the growth, to the depth of about half an inch, is firm and fibrous-looking; it has a dead-white appearance, and cuts like ligamentous tissue. The structure of the other labium and of the clitoris is, in all essential particulars, the same.

Microscopically examined, the epidermis is found very little hypertrophied; the dermis or cutis vera is much increased—particularly the rete mucosum and its dark granular pigment. But the chief change is in the subcutaneous cellular tissue. The superficial layers exhibit a dense fibro-cellular structure—broad bands of nucleated white fibrous tissue intersecting each other in an irregular manner in all directions. The blood-vessels are of large calibre and have thickened walls; and large, thin-walled channels lined by flat epithelium (probably dilated lymphatics) are seen following, more or less closely, the distribution of the enlarged blood-vessels. At certain intervals along these (lymphatics) there are accumulations (*depôts*) of cells like white blood-cells (lymph corpuscles), which seem to have escaped by rupture or otherwise, and show a tendency, at the margins of the *depôts*, to a linear dispersion or disposition (parallel to the surface of the skin) in the interstices of the fibrous net-work.

In the deeper strata, much elastic tissue—with long curling or wavy filaments, is seen, and the mucoid infiltration is large. Numbers of round, angular, and stellate corpuscles, with single nuclei and caudate processes, are found here, and the blood-vessels are also abundant. Not much adipose tissue is found, although, to the naked eye, this also appears to be in excess.

The growths are, therefore, *fibro-myxomatous*, and in other respects also correspond to the well-known characters of "*elephantoid* tumours."

Presented by Professor T. E. Charles.

87. A "serotal tumour" removed from a Hindu aged 40. The growth is said to have been of one year's duration. It weighs about 13 ounces.

This is a characteristic specimen of *nœvoid* elephantiasis, and exhibits all the specific peculiarities of such growths.

On microscopic examination, the following abnormal changes are observed in the cutaneous and subcutaneous structures:—(a) *epidermis*,—greatly hypertrophied; the epithelial proliferation abundant but irregular, and forming more or less papillary or tuberculous excrescences, some very soft and spongy, others hard and wart-like. (b) *Rete mucosum*,—well formed, very dark

filled with much black granular pigment, particles of which are to be traced into the cutis vera at the bases of the papillæ. (c) *Cutis vera*,—very greatly hypertrophied,—the papillæ large and broad. Towards their bases, loculi or spaces are found, oval or rounded in shape, lined by a delicate and imperfect layer of pavement or flat epithelium (rendered very visible after staining of sections with nitrate of silver). These spaces or ampullæ appear to be *lymphatic* enlargements, although it is very difficult to trace their direct origin from, or communication with, vessels of this system. (d) *Subcutaneous tissue*,—the normal fibro-elastic tissue is highly developed, forming coarser and finer strands, which decussate irregularly with each other, and constitute a dense reticulated structure, in the meshes of which a very abundant *nuclear* growth is observed;—the nuclei small, round, and nucleolated, some as large as, others smaller than, leucocytes or blood-corpuscles. Very little adipose tissue is found,—it is, in fact, remarkably scanty. As the deeper strata are reached, the smooth muscular tissue of the dartos comes into view;—the fibres are highly developed, and intersect each other irregularly. The subcutaneous blood-vessels are also abnormally large, and in parts dilated; their walls (particularly as regards the arteries) thickened. The remains of hair-bulbs and sweat glands—few, and the latter distinguished with some difficulty.

The great and leading characteristics of the growth are (1) the excessive development of the cutis vera, subcutaneous fibro-elastic tissue, and dartos; (2) the diffuse infiltration of all these structures by a small round-celled or nuclear growth, reaching upwards into the papillæ, and downwards into the deepest layers of the subcutaneous tissues; and (3) the ampulliform dilatation of the lymph-canals. The hypertrophy of the epidermal epithelium is inferior to that of the dermis or cutis vera.

88. "Lymph-serotum" or nœvoid elephantiasis of the serotum. From a native male, aged 30. The growth was of two years' duration. The inguinal glands were enlarged and indurated. The skin of the perinæum and that around the anus was also thickened and diseased, and was removed with the rest of the tumour.

This is a very well-marked example of the so-called nœvoid variety of elephantiasis. It affects both the prepuce and the serotum. These parts, especially the latter, are covered with warty and bulbar, soft outgrowths of the skin, which vary in size from a swan-shot to a hazelnut, and are separated by narrow and deep fissures, in which is collected brownish sebaceous material. Several of these outgrowths discharged, during life, a thin sanious or lymphoid fluid, exhibiting, under the microscope, blood-cells, lymph-corpuscles, and filariæ (*F. sanguinis hominis*). The blood of the patient (also examined) contained similar filariæ. Others of the outgrowths are solid, but juicy and succulent.

Thin sections from various parts of the growth when placed in water swell up and become pellucid.

Examined microscopically, the epidermal layer is found greatly exaggerated, and in parts almost warty. The rete mucosum is normal; the pigment dark and granular, but not excessive. The cutis vera is chiefly affected. Its papillary and superficial strata are infiltrated, in great abundance, with small round cells and nuclei; show larger and smaller lymph-spaces; dilated capillaries, forming—just beneath the papillary layer—a plexiform arrangement, quite œvoid in character on cross section. Deeper down, the smooth muscular tissue of the dartos, the sudoriferous and sebaceous glands come into view—all much hypertrophied; and the subcutaneous fibro-elastic tissue is throughout hyperplastic. There is a remarkable absence of fat.

89. A very typical, deeply lobulated, fatty tumour (lipoma), removed from the anterior wall of the abdomen. It was situated just beneath the skin, measures six inches in length by four inches at the broadest portion, and consists of two principal lobes united by a thick isthmus. Each of the lobes is further subdivided into lobules by deep fissures, and the whole growth is invested by a delicate capsule of connective tissue.
90. "A fatty tumour removed from the region of the deltoid. The smooth uniformity of the section—only interrupted by a few scattered blood-vessels—is well illustrated. Microscopic examination shows fat globules distinctly." (Ewart.)

Presented by Dr. Herbert Baillie.

91. Fatty tumour or lipoma—the size of a pomegranate, and with a short thick pedicle. The skin over the growth is remarkably tense and smooth, and the consistency of the tumour so soft that it was supposed to be a cyst. It is, however, throughout solid, and purely fatty.—Removed from the left groin of a native female aged 45.

Presented by Professor S. B. Partridge.

92. "A fatty tumour, weighing twenty-four ounces, removed from the left thigh of a native male aged 60." The remarkably lobulated character of the majority of such growths (lipomata) is well illustrated by this specimen.

Presented by Assistant Surgeon Lukhi Narain Bose.

93. A large fatty tumour "removed from the left thigh of a prisoner named Ajoodhee, aged 20; of ten years' growth; weighing at time of removal eight pounds."

The tumour is a magnificent example of a true or pure lipoma; it is oval or melon-shaped, circumference $28\frac{1}{4}$," long diameter 10," short diameter 8." The external surface is smooth; the capsule distinct, two to three lines in thickness, and composed of tough connective or fibro-cellular tissue. The substance of the growth on section is smooth, homogeneous, and yellow.

Examined microscopically, the tumour is found to consist of pure adipose tissue, *i.e.*, large round or oval cells filled with oil, and many of them containing acicular fat crystals. These are grouped together, in larger and smaller lobules, by delicate and scanty connective tissue, which, forming fine strands

or bands throughout the growth, becomes continuous with its capsule at the periphery.

Presented by Dr. J. W. Taylor, Civil Surgeon, Mainpuri, N. W. P.

94. A large fatty tumour (lipoma), removed from the right gluteal region of a native male patient, aged 32. The growth was of three and a half years' duration, and is said to have developed spontaneously. It weighs $4\frac{1}{2}$ pounds. The tumour has a distinct capsule of firm fibrous (connective) tissue, and its surface is highly lobulated.

Presented by Professor S. B. Partridge.

95. Fatty tumour removed from the left groin of a native boy, aged four years. It was of 18 months' growth. The tumour is polypoid or pediculated, and markedly lobulated; it has a complete well-developed fibrous capsule. Is soft, and of a creamy-yellow colour on section, and is composed of granules and lobules of adipose tissue held together by a small amount of nucleated connective tissue, and sparingly supplied with blood-vessels.

Presented by Professor Gayer.

96. "A fatty tumour, of a pyramidal shape, removed from the breast. It is about the size of an orange, and entirely made up of small aggregations" (lobules) "of fatty substance, each of which is bounded by delicate areolar tissue. The external aspect of the growth resembles nothing so much as clusters of grapes when these are assuming a yellow colour." (Ewart.)

97. A large, somewhat dumb-bell shaped fibro-lipoma, from the cervical region. Each division of the growth is as large as one's fist. The general outline of the tumour is lobulated. It has a distinct thick capsule of fibrous tissue. A section through the lower half of the tumour reveals a broadly reticulated structure of firm white fibrous tissue, into the meshes of which a large quantity of yellow fat is deposited,—the whole forming a series of lobules bound together by firm connective tissue, and sparingly supplied with blood-vessels. "The swelling had existed for fourteen years, and it was deeply attached to the transverse processes of the cervical vertebræ."

98. A small portion of an enormous fatty tumour removed from the back and neck of a Mahomedan patient, aged 40. The growth was of about three years' duration, and hung, in a semi-pendulous form—like a huge solid sack,—from the back of the neck and dorsal portion of the spinal region. The skin was adherent to the tumour in several places. The structure is seen to be almost purely fatty. The fat is collected in varying-sized nodules or lobules, with broad bands or tracts of fibro-elastic tissue between them. The development of the latter is greater than in ordinary lipoma, and the growth may therefore be regarded as a *fibro-lipoma*. A distinct thick capsule invested the whole tumour. The patient died from the shock of the operation about six hours after it was performed. All the organs of the body were found healthy on *post-mortem* examination.

(See further, "Surgical *Post-mortem* Records," vol. I, 1881, pp. 807-8.)

Presented by Professor D. O'C. Raye.

99. A pediculated *fibro-lipomatous* tumour, somewhat flask-shaped, and rather larger than one's fist, "removed from the labium of a native woman." The fibrous tissue greatly preponderates.
100. A fibro-lipoma removed from the right shoulder of a native male patient. The growth is about the size of a cocoanut; is markedly lobulated—this being well seen on section, and closely adherent to the superjacent skin. The structure consists of large firm masses of adipose tissue, separated by an unusual and very large amount of nucleated white fibrous tissue, which renders the whole tumour exceptionally dense and resistant.

Presented by Professor K. McLeod.

101. A small hyaline enchondroma of the last phalanx of the great toe. The growth has developed in the cancellous tissue of the bone, and expanded the thin outer lamina of compact tissue around it. The structure is that of hyaline cartilage:—the cells are large, round or ovoid, and nucleated,—a few are stellate; the intercellular substance transparent or but faintly granular.

Presented by Professor J. Fayrer.

102. A hyaline enchondroma of the first phalanx of the thumb, originating in the cancellous osseous tissue of the same, and developing eccentrically so as to expand the bone, and form an irregularly rounded tumour, the size of a small orange. Its structure is identical with that of the last specimen. The terminal phalanx remains unaffected. No history.
103. Hyaline enchondroma of the first and second (middle) phalanges of the index finger of the right hand. The tumour is the size of an orange; surrounds the phalanges; is lobulated. The skin over it is tense, stretched, and at one spot ulcerated. Examined microscopically, the structure is found purely cartilaginous,—both cells and matrix being well defined.

Presented by Dr. R. K. Mookerjee.

104. "Tumour connected with the great toe; of three years' duration. From a native female aged about 25. The tumour is about the size of an orange, and ulcerated on the dorsal aspect towards the tip of the toe."

This is a typical specimen of enchondroma. The terminal phalanx is alone involved; almost the whole of it has been converted into a soft but coherent, yellowish-white tumour, about the size of a small orange. The cuticle and true skin are both greatly thickened and hypertrophied. The nail has apparently dropped off, and its matrix has undergone an ulcerative papillary transformation. The section of the tumour is smooth, but not homogeneous, and the great bulk of its structure consists of pure hyaline cartilage. The cells are well defined, and in a state of rapid proliferation in many parts. The intercellular substance is mostly hyaline or only faintly granular, but here and there shows traces of fibrillation.

Presented by Professor S. B. Partridge.

105. An enchondroma, the size of a tennis-ball, removed from the sub-maxillary region of a native male patient, a Hindu, aged 21. "The tumour commenced as a small nodule just beneath

the skin below the inferior maxilla, four years prior to removal, and had grown slowly and without any pain."

The tumour is lobulated in outline; firm and resistant on section. Pale-white glistening nodules or depôts of cartilage are visible even to the naked eye, separated by strands of yellowish fibrous tissue; and a distinct well-formed connective tissue capsule invests the whole growth.

This is confirmed on microscopic examination,—the cartilage is of pure hyaline type, the cell elements and intercellular tissue both well marked. The inter-cartilaginous tissue is fibrous and nucleated, and, in parts, groups of gland cells are found imbedded, as it were, in it, representing, probably, the remains of the submaxillary gland included in the morbid growth.

Presented by Professor H. C. Cutcliffe.

106. A large cartilaginous tumour, removed from an East Indian (male) patient, aged 25. The tumour is the size of a child's head, has a firm fibrous capsule, and, on section, has the appearance of a glistening pearly tessellated pavement,—islets, as it were, of pure hyaline cartilage, surrounded and held together by narrow intervening bands of fibrous tissue. The consistency is throughout firm. It is a very typical *hyaline enchondroma*.

Presented by Professor H. C. Cutcliffe.

107. An ossifying enchondroma from the inner margin of the head of the right tibia. The growth is about the size of half a walnut, and has a short broad pedicle; it is invested by a thin capsule (perichondrium); the basal portion is composed of spongy osseous tissue, the superficial layers are cartilaginous, pearly-white in colour, and so transparent that the rosy hue of the vascular subjacent bone can be readily distinguished through them. The cartilage is of the hyaline type, the cells are large, and in a state of proliferation and calcification, *i.e.*, the whole growth is rapidly ossifying. From an East Indian lad, aged 14.

Presented by Professor S. B. Partridge.

108. A large ossifying enchondroma of the left leg. From a native male patient. The limb was amputated just below the knee-joint. The longitudinal section which has been made through the tumour shows that it is attached to about the lower four inches of the fibula, and has grown forwards, outwards, and backwards, from that bone. The posterior and outer aspects of the tibia are eroded and carious, probably from pressure, and the whole of the lower end of this bone is rarefied, soft, and fatty. The tumour is rather larger than the adult head, and irregularly rounded in outline. The skin over it is thickened and tuberculated, in parts ulcerated. There is a very firm, dense, white fibrous capsule,—derived probably from the greatly stretched and developed periosteum. The cut surface of the growth presents a partly bony, partly cartilaginous, structure. The osseous tissue exists in the form of huge stalactitic masses, the interspaces (and portions of the new bone itself) are filled with a softer, semi-translucent, bluish-white material, like solidified gelatine. This consists of pure hyaline cartilage, under-

going rapid osseous transformation. The peripheral portion of the tumour is composed of a layer of compact bony tissue, from two to three lines in thickness.

Presented by Dr. Griffiths, Civil Surgeon, Sylhet.

- 109.** An enormous enchondromatous growth, involving the whole of the left ilium, and constituting a tumour which weighs 11lbs 14 ozs. On the outer aspect, the skin exhibits three or four large, irregular-outlined, ulcerated openings, through which portions of the growth, in a softened and suppurating condition, were discharged during life. The great bulk of the growth projects from the outer and posterior aspects of the ilium, but a portion, the size of the foetal head, filled the fossa illi, lying beneath the iliac fascia and peritoneum (within the abdomen). The hip-joint was found healthy.

On longitudinal section through the thickest portion of the tumour, its structure is seen to be cartilaginous, firm and glistening. Towards the centre, however, and in other parts, this has broken down into a pulpy, jelly-like material, and in other situations again, has acquired greater density from calcification. The bony tissue of the ilium has almost completely disappeared. What is left consists of mere irregular masses of cancellous osseous tissue.

From a native male patient, who died in hospital. The tumour was said to be of twenty years' growth.

On microscopic examination, proves to be (as its physical appearances indicate) an enchondroma of the hyaline variety. In sections made, the cartilage cells are large, swollen, and filled with nuclei. Numerous free nuclei also exist suspended, as it were, in a hyaline or but slightly granular basis-substance. In parts calcareous changes are traced,—affecting principally the delicate connective tissue which binds together the lobules of the growth, but extending also to the true cartilage. In other situations marked mucoid changes are apparent—the cells and intercellular substance being infiltrated by soft, glistening, glue-like material. The broken-down, jelly-like portions of the tumour (above described) consist of this kind of metamorphosed cartilage.

- 110.** Enchondroma of the right tibia. The preparation shows an oval shaped tumour fully the size of an infant's head, surrounding the upper third of the shaft of the tibia. A longitudinal section through the latter has been made, from which it will be seen that the cancellous tissue of this portion of the bone is condensed, and the medullary canal obliterated by a growth of new osseous tissue. The tumour has developed from the periosteum of the tibia, and perhaps to a certain extent involves the upper epiphysis,—which is still partly cartilaginous. The fibula is not implicated, but is imbedded between the anterior and outer lobulated masses formed by the growth. The tumour-tissue generally is firm, glistening, and semi-transparent. In parts, however, it has undergone considerable softening; and, in the recent state, some of the localised softenings of the mass felt through the skin like cysts with fluid contents. They are due to liquefactive degeneration of the cartilage, the result of mucoid metamorphosis. Sections taken from the harder and

softer portions of the tumour for microscopical examination reveal the same principal structure, viz., rapidly developing hyaline cartilage, with such modifications only as can be traced to fatty and mucoid changes. The cells are very numerous, mostly round or oval, and contain two or more distinct nuclei. The intercellular substance is homogeneous or faintly granular. The tumour—developing from the deeper layers of the periosteum—has received a capsular investment from its superficial laminae, which is also directly continuous with the periosteum of the shaft below the situation of the growth.

Amputation was performed at the lower third of the thigh. The knee-joint was found quite healthy. There were some enlarged glands in the groin. The tumour was said to have been of from five to six months' duration. The subject was a native boy aged 12 years.

Presented by Dr. Cayley.

111. A fibroid enchondroma of the lower jaw. The tumour is ovoid in shape, two and a half inches long, by an inch and a half in breadth, and fully one inch in thickness. Its outline is lobulated; the surface smooth. On section, the growth has a dingy-white colour, is fibroid-looking, and traversed by numerous delicate spicula of bone, which form dissepiments throughout its substance. The latter, on microscopic examination, is seen to consist of fibro-cartilage. The cells are small, rounded, oval, or irregular, the intercellular material white and glistening, markedly fibrillated. Two incisor teeth are imbedded in the growth, which has evidently developed from the alveolar border of the jaw. The delicate bony dissepiments, above noticed, are prolongations downwards of the osseous septa which are normally interposed between the sockets of the teeth.
112. A fibroid enchondroma of the left superior maxilla, removed—together with the molar bone—from a Chinese (male) patient. The surface of the growth is smooth; its outline slightly lobulated; it is very dense, firm, and compact on section—cuts like ligament;—and is seen to consist (under the microscope) of fibro-cartilaginous tissue. The cartilage cells are very numerous, but small, round or irregular, nucleated, and placed in groups or small depôts in the meshes of well-formed interdigitating fibro-clastic filaments.
113. A tumour removed from the left parotid region of a native female, aged 60;—a growth of twenty years' duration. The tumour is ovoid in shape; as large as the adult head; is much lobulated; has a distinct capsule of fibrous tissue; and a portion of the superjacent skin of the neck is still adherent to its surface. On section the growth is firm but elastic or yielding, has a bright glistening semi-transparent appearance in parts, in others is opaque-white or yellowish; and here and there portions are found pulpy or almost diffuent. The cut surface, in the fresh state, was blotched and stained of a pinkish or purplish colour from blood. Bands of white fibrous tissue traverse the

tumour-substance in various directions, binding together the lobules of which it is composed.

The general and principal structure,—as seen in sections taken from several parts of the tumour and examined microscopically,—is *fibro-cartilaginous*. The cartilage corpuscles are well-formed, some large and oval, the majority small and round, many stellate, and all nucleated. The intercellular material is finely fibrillated. In the parts which are more opaque and dull-looking, *gland-tissue* is seen mixed up with the cartilage; and, where the growth is very soft or semi-diffuent, the cartilage has undergone mucoid degeneration.

Presented by Professor Gayer.

114. A fibro-cartilaginous tumour removed “from the right cheek of a Mahomedan male, an adult.”

The tumour is as large as one's fist, is lobulated in outline, has a distinct capsule of connective tissue. On section, it is firm, shiny, and opalescent in appearance for the most part, but here and there, more opaque and soft. It is found (under the microscope) to consist almost entirely of pure fibro-cartilage. The cells are well-developed, round or irregular, and nucleated. The intercellular tissue is finely but distinctly fibrillated. In parts a little glandular tissue appears to have been included in the growth, which is evidently a *fibro-enchondroma*.

Presented by Professor W. J. Palmer.

115. A rounded and slightly lobulated tumour removed from the submaxillary region of a Hindu (male), aged 40. The growth is firm, glistening and pale in parts, in others dark-red from blood-staining (in the recent state). Its structure, under the microscope, is complex:—in parts purely glandular—the acini and gland-tubules filled with proliferating, granular, small, round, epithelial cells, of uniform size, and entirely confined within normal limits. In others, the structure is fibrous—broad and wavy bands of nucleated white fibrous tissue intersecting each other in various directions. But the main bulk of the tumour is cartilaginous—the cartilage cells being angular, rounded, and spindle-shaped, and the intercellular tissue fibroid—not hyaline. The growth is therefore, virtually, a *fibroid enchondroma*, originating probably in the submaxillary gland. There is a distinct and well-formed capsule of condensed connective tissue.

Presented by Professor K. McLeod.

116. Enchondroma of the phalanges. A preparation showing a finger amputated on account of a lobulated tumour affecting the phalanges. The middle phalanx is principally involved. The substance of the growth is somewhat soft, elastic, and opalescent on section. It has developed interstitially, *i.e.*, within the bone, and expanded the osseous tissue around it, but has not penetrated the superficial soft parts. Under the microscope, the structure consists of *hyaline cartilage*,—the only peculiarity observed is that *stellate* cells enter very largely into the composition of the tumour-tissue. No history.

117. Enchondrosis. "A tumour about the size of a pigeon's egg removed from the nose of a native (male) patient, aged 35." It grew from the inferior border of the cartilaginous portion of the septum nasi; had increased slowly and painlessly; but, at the time of removal, had almost occluded the nostril anteriorly, leaving, in fact, only a small space or chink between it and the alæ nasi on either side. The growth is invested by a delicate but distinct capsule,—a prolongation of the Schneiderian membrane. The structure, microscopically, is fibro-cartilaginous. Thin sections exhibit well-formed cartilage-cells in a state of rapid proliferation, but angular and flattened rather than round or oval; the intercellular substance is fibrous or fibrillated—not hyaline. No abnormal or heteroplastic elements are found. The so-called "tumour" is therefore an homologous *outgrowth* from the cartilaginous septum nasi, *i.e.*, an enchondrosis.

Presented by Dr. A. Crombie.

118. An osteoid tumour of the upper jaw. The growth has developed in the antrum, and expanded this cavity around it. A portion remains *in situ*, the rest in fragments as removed. The consistency is very hard and firm,—in parts quite bony. The structure generally is osteoid in character, *i.e.*, consists of embryonic cells developing into bone,—the latter being scattered in microscopic islets throughout the growth, but as yet presenting no differentiation into Haversian channels, canaliculi, &c.

119. A large enchondro-sarcoma involving the upper two-thirds of the left radius, and forming a lobulated tumour the size of an infant's head. It has apparently developed from the medullary canal. An expansion of thickened connective tissue forms a more or less complete capsule for the growth, and is derived probably from the original periosteum. On section, a mixed structure is presented;—portions are semi-transparent, glistening, and evidently cartilaginous; others have a yellowish colour and very soft consistency. The latter, under the microscope, appear to be made up of closely-packed, small, spindle-shaped, nucleated cells. The cartilage is of the hyaline type, and much of it shows traces of ossification. Much central softening of the substance of the tumour has taken place, and amidst this are found fragments of the disintegrated radial shaft. The elbow-joint is stiff, but not implicated in the morbid growth.

Presented by Professor J. Fayrer.

120. "Left forearm of a Hindu boy, aged seven years, amputated just below the elbow (the radius being disarticulated at the joint, and the ulna sawn through) for a large fungating mass situated a little above the wrist. The tumour is ovoid, about four inches in length and three in width; firm below, rather soft and doughy above." * * * * * "An incision along the inner side of the forearm shows that the tumour lies under the fascia covering the deep layer of muscles, by which it is bound down, and to which it owes a great deal of its firmness,—the actual tissue of the tumour itself being soft. It is quite unconnected with the bone. (Colles.)

The superficial portions of the growth are exceedingly soft and friable;—the deeper, firm and partly osseous,—the bony matter consisting of broad spicula of spongy osseous tissue. Above and between these, there are portions which present a glistening cartilaginous appearance; and, most superficially, the growth is fungoid and pulpy,—protruding on the palmar aspect of the wrist.

Microscopically examined, portions of the growth are found purely cartilaginous, the rest (except the firm osseous tissue) consists of large, round or oval, and a few spindle-shaped, nucleated cells, with no intercellular material or formed stroma. At the surface, these are most luxuriant, and closely resemble the cell-elements of a fungating epithelioma.

The tumour seems to have developed from the periosteum investing the anterior surfaces of the last inch of the lower ends of the shafts of the ulna and radius. It appears, on the whole, to be *enchondro-sarcomatous*,—the basal osseous formation being imperfect, and a secondary change during the progress of the growth. (J. F. P. McC.)

Presented by Dr. Herbert Baillie.

121. Malignant tumour (enchondro-sarcoma) of the upper end of the right femur, implicating also the os innominatum of the same side. It forms a lobulated mass, 26 inches in circumference at the widest part. The greater portion projected inwards—towards the perinæum, a smaller portion outwards; and the femoral vessels lay in a shallow groove or sulcus between them. The adductor muscles of the thigh were found greatly thinned, and stretched over the surface of the tumour. The structure—as seen on longitudinal section—is soft and brain-like; of pinkish-white or yellowish colour in different parts, and considerable portions have broken down into a jelly-like mucoid or colloid material, and constitute pseudo-cysts. The medullary canal of the femur is filled with the growth. The neck of this bone has been completely absorbed, and the cancellous tissue of the head and trochanters infiltrated with a yellowish or pinkish, flickering, soft material. All these parts are very soft and friable, so much so that on attempting to open the hip-joint the head of the bone fractured readily, and has remained fixed in the acetabular cavity.

The upper third of the femur (including both trochanters) is thus involved in the morbid growth. It is invested by a more or less complete capsule, consisting, apparently, of the greatly expanded and developed *periosteum* of the femur,—from the inner surface (deeper layers) of which, as well as from the articular and trochanteric surfaces of the bone, the growth has developed.

A large or coarsely alveolar character and soft consistency are presented on section; and on microscopical examination, a *mixed structure* is revealed. The alveolated appearance is maintained throughout,—the spaces or alveoli being formed by the intersection of broad and narrow bands of well-marked fibrous tissue, enclosing (*a*) fibro-cartilaginous tissue in a state of rapid proliferation, and at the same time undergoing extensive mucoid softening or infiltration; (*b*) small, round, soft, nucleated cells, lying heaped together in masses of varying size, having no intercellular substance, or but a scanty homogeneous material; and cells of the same type, but spindle-shaped or caudate. Similar cell elements are also found external to the alveoli, along the course of the fibroid dissepiments or alveolar walls. The growth seems to be an enchondro-sarcoma,—a mixed tumour of malignant character.

Secondary growths were found in the lungs, near the surface, forming slightly projecting nodules, varying in size from that of a pea to that of a hazelnut. These presented a glistening semi-cartilaginous appearance on section, and a microscopic structure strictly homologous to that of the primary tumour

From a native male patient, aged 60, who died in hospital. The tumour was of about two years' duration. (*See further, "Surgical Post-Mortem Records,"* vol. I, 1877, pp. 389-90.)

122. A large *compact* osteoma of the lower end of the femur, involving, apparently, both condyles and the lower fourth of the shaft of this bone. It forms a lobulated mass, measuring sixteen inches in circumference. There is a thin connective tissue capsule,—probably derived from the original periosteum.

On section, the growth is (almost uniformly) very dense, hard, and truly bony; towards the surface, however, there are parts which show a softer consistency and fibroid appearance. This tissue, examined microscopically, is fibrous—resembles that of the deeper layers of the periosteum,—but is also undergoing calcification and conversion into bone.

Presented by Professor J. Fayrer,

123. Osteoma of the lower jaw. The growth involves the right half of the body and a portion of the ramus of the jaw, including the whole thickness of the bone; is thus as large as one's fist, and of an irregularly ovoid shape. It is invested by thickened periosteum. On section the structure is firm and *compact* for the most part, but here and there limited portions consist of very condensed, firm, ossifying, white fibrous tissue. Several circumscribed cystic cavities are also seen. These have a shiny, brilliant-white lining membrane, and are said to have been occupied by "gelatinous matter" (? mucoid).

The tumour was of three years' growth. The subject—a native male aged 50.

Presented by Professor J. Fayrer.

124. A large osseous tumour of the lower jaw, removed from a native male patient, aged 30. It is said to have been of 25 years' duration. The growth is about the size of the foetal head, and weighs twenty-five ounces; is more or less rounded in outline. The upper third is invested by the mucous membrane of the gum and that lining the floor of the mouth; this is opaque-white, dense, almost integumental in character. Posteriorly, on the right side, three molars and the first bicuspid tooth are recognised (imbedded in the growth), and on the left, the three molars and both bicuspids. The tumour is very hard and firm to the feel. On section it is seen to involve almost the whole of the horizontal ramus of the jaw, and is thickest or broadest near the symphysis. The greatest longitudinal diameter of the growth is $4\frac{1}{2}$ ", greatest transverse diameter $3\frac{5}{8}$ ".

The cut surface shows an almost uniform, smooth, pale-pink, osseous structure. The bone is hard, dense, and *compact*, with but scanty intervening strands of fibrous tissue. This interstitial material is very small in quantity;—the great bulk of the tumour

is composed of compact bone—pure and simple. A few cyst-like excavations exist. They are lined by a distinct smooth and shiny membrane, and their contents (now dropped out) consisted of a soft, pulpy, and milky-looking material, which, under the microscope, revealed numerous broken down or round granule-cells, some squamous epithelium, and a very large quantity of fatty molecules and granules. The interstitial material (between the bony masses) consists of firm white fibrous tissue plentifully infiltrated with calcareous particles, and evidently represents a transitional condition in the development and growth of the tumour. Excision of the jaw was performed under chloroform, and the entire bone (with the tumour attached to it) removed. The man made a good recovery, and was discharged cured.

Presented by Professor K. McLeod.

- 125.** A large tumour, supposed to be malignant, involving the tibia and implicating the right knee-joint. The growth was said to be of eight years' duration. The subject was a native male, aged 35. Amputation at the lower third of the thigh was performed. The patient died.

On a longitudinal section being made through the femur and tibia (see preparation), the former shows great thinning of its osseous tissue, with vascularity and pulpy softening of the medulla. The compact tissue is thin, the medullary canal expanded, but the lower extremity of the femur is not altered in size, and its articular cartilage remains unaffected. The patella exhibits similar changes—osteoporosis of its cancellous structure, which is filled with soft, oily, and vascular medulla. The tibia and fibula are flexed at right angles to the femur. The ligaments of the knee-joint are all contracted, soft, infiltrated with fat, and greatly atrophied. The articular cartilage on the head of the tibia is hollowed out into a cup-shaped cavity, and ulcerated at its centre.

The tumour consists of a huge osseous mass, occupying the upper half of the tibia (the fibula being throughout unaffected), having a circumference of $19\frac{3}{4}$ " and projecting forwards and inwards beneath the skin of the upper part of the leg. Its outline is lobulated, nodulated, and irregular. The section exhibits a cavernous osseous structure,—the bone being hollowed out into a series of larger and smaller cavities, which are filled with soft reddish-brown or reddish-yellow, fatty, medulla-like material. The largest cavity is about the size of an orange; another, nearly as large, bounded by a thick rim of almost compact bone projects backwards into, and almost completely fills the popliteal space. The medullary canal of the tibia is exposed, and filled with similar soft, reddish, fatty pulp; the compact tissue thinned—so thin, in fact, that a fracture (probably spontaneous) has taken place, about two and a half inches below the limit of the growth or tumour.

On microscopical examination of portions of the pulpy material filling the osseous caverns, a large number of disintegrating blood-corpuscles, pigment granules, fat globules, myeloid cells, and small, round, slightly granular

cells ("embryonic" cells)—are discovered, but no abnormal cell-elements of any kind.

The rounded, well-defined cavern in the popliteal space is almost entirely filled by a blood-coagulum, showing no evidences or traces of lamination, and no direct association or connection with the popliteal vessels.

The cellular and other elements above described, indicate a highly proliferating, and, at the same time, degenerating (fatty) condition of the normal medulla, and the growth must therefore be regarded as a true *osteoma*, and not a malignant tumour. (See further, "Surgical *Post-mortem* Records," vol. I, 1875, pp. 111-12.)

Presented by Professor K. McLeod.

126. Osteoma of the lower end of the right thigh-bone. From a native boy aged 14.

The preparation exhibits a well-marked compact osteoma of the lower third of the shaft of the femur, not involving the epiphysis. It extends about half way up the bone, constituting a pyriform expansion of the shaft. The medullary canal for this distance is entirely blocked,—converted into solid, firm, osseous tumour-tissue. The whole growth is very dense and compact, appears to have originated in or near the medullary canal, and has extended centrifugally. The original periosteum is greatly developed, and invests the surface of the tumour. In parts, immediately beneath the periosteum, the tumour-tissue is softer and fibroid-looking. It exhibits, under the microscope, all the characters of so-called osteoid tissue, *i.e.*, a transitional tissue,—calcified, but not as yet showing differentiation into true bony structure.

Presented by Professor Gayer.

127. Osteoma of the lower jaw. From a native male patient, aged 40. It was of about eleven years' duration. The left half of the lower maxilla with the whole of the growth has been excised, and is preserved. The section made through the whole thickness of the tumour shows its structure to be purely osseous;—the new bone is well-formed, dense, and compact. Here and there, however, are small loculi or spaces filled with soft, opaque, yellowish material, which consists, under the microscope, of medullary tissue in a state of fatty degeneration,—large myeloid, and smaller rounded cells are found, almost all in process of conversion into "granule-cells," an abundance of free fat and nuclei, and a little blood-pigment.

The patient died from pyæmia. (See further, "Surgical *Post-mortem* Records," vol. I, 1880, pp. 751-52.)

127a. An osteoma of the upper jaw. The growth involves the whole of the left superior maxilla, rendering it very massive, and filling up all the cavities or inequalities on its inner surface, including the antrum, in which situation it probably originated, as the structure is densest and firmest here, and the jaw is bulged out at this spot. The section which has been made shows that the structure is purely bony,—firm, *compact* osseous tissue. Only at the upper part of the growth, where it projected into the orbit, is the structure

fibroid; but the fibrous tissue here is also undergoing ossification, and therefore merely indicates a progressive slow advance of the growth in this direction. The cut surface is otherwise smooth and homogeneous. The tumour is the size of an orange; has a somewhat dumb-bell shape owing to a slight constriction towards its centre. The alveolar margin of the jaw is not affected; the teeth are normal and firmly implanted. From a native male, aged 28. The duration of the growth was five years.

Presented by Dr. J. F. Mullen.

128. An osseous tumour of the lower third of the right femur. It forms an irregularly rounded mass, which projects principally on the outer aspect of the bone. Is very hard and firm to the feel. On section the structure is spongy or cavernous in character. The growth has originated from an expansion of the cancellous osseous tissue of the shaft primarily, the compact outer lamina undergoing subsequent attenuation. The periosteum of the shaft forms an investing capsule over the tumour; is a good deal thickened in parts, in others is wanting—where projection and ulceration of the growth outwards have taken place. The spongy tissue of the condyles is partially involved, but the articular cartilage has not been reached. In some of the bony alveoli a soft, yellowish, cheesy or putty-like material may be seen. This, under the microscope, consists of a granular, oily *débris* of round cells, free nuclei, and much fatty matter, *i.e.*, degenerated medullary tissue;—no extraneous or foreign growth. The tumour is a true spongy or cavernous osteoma.

129. “A very large exostosis springing from the lower two-thirds of the femur, removed from a patient at the Sukea Street dispensary by amputation at the hip-joint. It weighed 10lb including the upper third of the healthy femur.” (Ewart.)

A longitudinal section made through the tumour shows that it is a huge *spongy osteoma*, which has developed, probably, from the periosteum of the shaft of the femur, but does not involve the lower epiphysis. (The shaft has been partially absorbed into the structure of the growth, and deflected to the right). It is composed mainly of spongy or cancellous osseous tissue, exhibiting in places deep excavations, which are filled with soft medullary substance. Towards the periphery of the growth the bone is more compact, and here and there tipped with cartilage. It is roughly ovoid in shape; the surface broadly lobulated. The skin over it is in parts ulcerated. The tumour seems to have projected on the anterior and inner aspects of the right thigh.

The age of the patient is not recorded, but, judging from a photograph preserved in the museum, he seems to have been a native lad of from 12 to 14 years of age. The operation was successful. The boy made a good recovery.

Presented by Professor S. B. Partridge.

130. A large lobulated growth (about the size of the foetal head), originating apparently from the superior epiphysis of the left

tibia. On section it is seen to be almost completely osseous, a thin rim of cartilage—two to three lines in thickness—being found only at the periphery of the tumour. Superiorly it encroaches upon, but does not involve, the knee-joint (the structures of which are found quite healthy). Below it extends for about two inches along the outer surface of the shaft of the tibia. The fibula is not implicated. The bony tissue composing the bulk of the tumour is cancellous or spongy in character. The growth is evidently an osseous tumour; it constitutes the so-called “enchondroma ossificans” of Virchow.

The subject was a native male (Hindu) aged 25. The tumour was of eight years' growth, and almost painless.

Presented by Dr. E. Lawrie.

- 131.** Spongy osteoma. A large lobulated tumour, developed from the head (probably the epiphysis) and upper half of the shaft of the right fibula; not involving the tibia, but pressing upon its shaft, and thus producing a lateral curvature of that bone. The growth is ovoid in shape; its surface is invested by the highly developed periosteum of the fibula, immediately beneath which there exists, here and there, a rim or lamina of hyaline cartilage, a line or two in thickness. The upper half of the medullary canal of the fibula has been obliterated by the pressure of the growth. The firmest portion of the latter is that which corresponds to the head of the fibula. Measurements:—(a) extreme length $6\frac{1}{2}$ ", (b) extreme breadth $3\frac{1}{3}$ ", (c) circumference 12". The tumour is more or less uniformly osseous or spongy. It is said to be a growth of only one year's duration. “From a native male on whom amputation at the lower third of the thigh was performed at the Mayo Hospital.”

Presented by Dr. H. C. Cayley.

- 132.** Osteo-sarcoma of the right humerus. “The growth was exceedingly rapid, six weeks in duration according to the statement of the patient. Amputation was performed at the shoulder-joint.”

The morbid growth involves the whole of the upper third of the humerus, including its head and tuberosities, and forms a globular tumour the size of a small cocoanut. On longitudinal section the shaft of the bone is seen to be completely necrosed, broken up into rough stalactitic masses, which are exceedingly soft and brittle. The medullary canal is widened and hollowed out, and the cancellous tissue of the head and tuberosities has broken down so as to form a cavity, the size of a small orange, filled with opaque, pulpy, soft material, and fragments of rough bone. The cartilage investing the head of the humerus remains unaffected, and also about a fourth of an inch of the cancellous tissue beneath it. The morbid growth has originated in the interior of the bone and expanded it in various directions eccentrically. The muscles surrounding the shoulder joint—especially on its outer and anterior aspects—are matted together, and their deeper layers (those nearest the bone) are in a state of fatty degeneration. There is, however, very little morbid infiltration of the soft parts surrounding the osseous structures.

Examined microscopically, scrapings and sections exhibit a closely packed, soft, cellular structure, having no "formed" intercellular substance. The cells are about the size of, or a little larger than, pus-corpuscles;—very granular and fatty; the great majority round, a few angular; but no great diversity in size or shape exists. Many free nuclei, and a great abundance of fatty granules and molecules make up the rest of the field.

Presented by Dr. J. R. Jackson, Civil Surgeon, Mynpoorie, N. W. P.

- 133.** A malignant tumour of the lower end of the left femur, of about four months' duration. From a native boy, aged 14 years. Removed by amputation at about the middle of the thigh. The tumour is intimately connected with the rectus and vasti muscles on the front of the lower half of the thigh anteriorly, and posteriorly extends into the popliteal space. Altogether it is about as large as the foetal head. Its consistency in front (two inches above the knee-joint) is very soft, and a considerable portion here has broken down into a shreddy, tattered mass. Below this, the tumour substance appears to be intimately connected with the inferior epiphysis of the femur, and also involves the shaft of the bone for a distance of quite four inches above the epiphysis. It projects from all these parts in a somewhat fungus-like manner, and fills the medullary canal of this portion of the femur. The growth also encroaches upon, and partially involves, the ligaments of knee-joint.

On microscopic examination, a complex structure is presented by the tumour-tissue. In its basal portion—nearest the bone—small nodules of both hyaline and fibroid cartilage are found pretty freely distributed, but the greater part of the superficial portions is composed of round, spindle-shaped or angular cell-elements, lying closely packed, and without any intercellular substance. Large blood-vessels—in parts forming an almost cavernous system—ramify amidst these soft cellular tissues. Lastly, in parts the structure is more fibroid,—the fibrous tissue imperfectly fibrillated, and also showing calcification or partial ossification. On the whole, the tumour may be regarded as an *osteo-sarcoma*.

Presented by Professor Gayer.

- 134.** Osteo-sarcoma of the right leg. The preparation exhibits a large, irregularly oval-shaped tumour, involving the upper two-thirds of the tibia,—the fibula being slightly deflected outwards, and remaining unaffected. The growth surrounds the bone, is moderately nodulated, and, on the anterior aspect of the leg, about two inches below the knee-joint, has made its way through the skin, and presents here as an ulcerated fungoid-looking mass, the size of a large orange. The knee-joint itself is not involved, and the patella remains free.

On a longitudinal section being made through the whole thickness of the tumour, it is found to have developed, apparently, from the periosteum, and spread outwards. The shaft of the tibia has become condensed and thickened; the medullary canal in the upper two-thirds of the bone has been almost completely filled up by firm osseous tissue, and the cancellous structure of the head of the tibia is abnormally condensed and compact.

The consistency of the tumour is not uniform, and its structure varies accordingly. Portions are very firm and dense, and composed of fibrous tissue, ossifying cartilage, and imperfectly formed bone. Others are exceedingly soft and pulpy; of a yellowish-pink or bright vermilion colour (in the fresh state); and extremely vascular, indeed, exhibiting an almost cavernous structure. Sections from these softer portions of the growth reveal, under the microscope, an almost purely cellular structure:—the cells are round, oval, or spindle-shaped, with large nuclei and granular protoplasm, have no definite arrangement, and no distinct or formed intercellular tissue or stroma.

The skin and subcutaneous tissues are infiltrated on the anterior aspect of the tumour. The latter is throughout ill-defined, and possesses no limiting capsule.

From a native male patient, aged 18. The growth was of about nine months' duration.

Presented by Professor K. McLeod.

135. The upper two-thirds of the right fibula, showing the osseous remains of a very large,—probably osteo-sarcomatous,—tumour, which involved the upper third of the shaft and the head of the bone. A large mass of stalactitic bone,—forming irregular rugged tubers, and sharp flattened processes,—may be observed. The osseous tissue is imperfectly developed, is more chalky and brittle than healthy bone, and, moreover, displays no differentiation into Haversian canals, lacunæ, &c. The soft or organic portion of the growth has been removed, and only its calcareous basis remains.

The whole of the shaft shows evidences of superficial or surface thickening, while the interior is very spongy, and the cancellous tissue increased at the expense of the compact (osteoporosis). No history.

136. The bony framework or skeleton of (probably) an osteo-sarcomatous tumour. "Its radiating and acicular character is well marked." No history.

137. "A reniform deep-seated tumour removed from between the inter-muscular spaces in the anterior part of the thigh, measuring four by two inches." Its outline is lobulated, and it has a distinct fibrous capsule. On section is waxy-looking, smooth, and homogeneous; and, examined microscopically, is found purely glandular in structure,—small, round, nucleated cells in a narrow-meshed reticulum of delicate connective tissue. The tumour is a *simple lymphoma*.

Presented by Professor R. O'Shaughnessy.

138. A large, lobulated glandular growth, "removed from the neighbourhood of the left angle of the lower jaw." It consists of a series of smooth nodules, bound together by delicate, yet firm, connective tissue, and each possessing a distinct capsule or fibrous investment of its own. The structure, microscopically, is that of *simple lymphoma*.

Presented by Professor J. Fayrer.

139. Simple lymphoma. A mass of upwards of fifty lobulated and hypertrophied lymph-glands removed from the axilla, where they

formed a large tumour "of six months' growth." These glands are grouped together by a varying thickness of connective or fibrous tissue. Some are as large as a potato, the majority about the size of a pigeon's egg. Many have been dissected out of the mass and are merely strung together now artificially. Their structure is purely lymphoid.

Presented by Professor J. Fayrer.

- 140.** Portion of a large glandular tumour removed from the right side of the neck of a native female aged 18. "It consisted of a number of nodules, varying in size from that of a grape to that of a small currant,—apparently altered lymphatic glands,—each surrounded by its own fascial capsule, on slitting up which they were easily removed."

"Under the microscope, scrapings and thin sections showed numerous oil globules and granules, and very numerous cells about the size of blood-corpuscles, with granular contents (lymph cells)." (Colles.)

Presented by Professor S. B. Partridge.

- 141.** A simple lymphoma removed from just above the bend of the elbow (right), in close proximity to the ulnar nerve. From a native male patient, aged 30. The tumour was solitary, and of slow growth.

It consists (as seen on microscopic examination) of small, round, lymphoid cells, each about the size of a leucocyte or white blood-corpuscle, and possessing a single or double distinct nucleus. The intercellular stroma is very delicate, and forms small meshes, each of which encloses from one to three cells. At the periphery the structure is denser and more fibroid, and includes a considerable deposit of fat.

Presented by Professor H. C. Cutcliffe.

- 142.** Three small adenoid or lymphoid growths removed from the right popliteal space of a native woman. "They were situated beneath the tendons of the hamstring muscles, and caused the leg to be flexed at more than a right angle. Had existed for about two years." Portions of each growth show softening and disintegration of the tumour-tissue.

Presented by Dr. W. P. Dickson, Civil Surgeon, Dhurmsala.

- 143.** A small, lobulated, glandular tumour from the inguinal region of a native boy, aged 13 years; said to be a growth of two months' duration.

The tumour consists of a group of hypertrophied lymphatic glands. There is no abnormal or heteromorphic growth; the lymphoid cell elements of the glands are found in a state of proliferation (*simple lymphoma*). One gland is particularly firm and cheesy—"tyroma".

Presented by Professor Gayer.

- 144.** Glandular tumour from the right side of the neck of a European seaman aged 30. There were also enlarged glands in the right axilla and groin, and on the opposite side of the neck. No history of syphilis. No splenic hypertrophy.

The tumour consists of a series of enlarged lymphatic glands, which vary in size from a pea to a hazelnut, and are bound together by broad bands of glistening white fibrous tissue.

Microscopically examined, the morbid growth is found purely homologous,—no new cell-elements being observed. The change appears to consist of a hyperplastic process affecting the normal cervical glands. A few of these enlarged glands exhibit, towards their centres, commencing caseation, but the majority seem to be still progressively developing.

Presented by Professor Gayer.

145. Tumour removed from the axilla of a native (Mahomedan) female, "said to have been growing for the last three months." It is very firm and hard to the feel, about the size of a small orange, and has a portion of the skin still adherent to its surface. Though firm, the tumour cuts very easily; and is seen to consist of a series of smaller and larger lymph-glands, matted together by an overgrowth of the normally surrounding connective or fibrous tissues; thus, the incised surface presents a nodulated appearance, the nodules smooth and homogeneous, separated by broad fibrous bands.

These appearances are confirmed on microscopic examination, the tumour consisting chiefly of lymphoid or adenoid tissue, and is therefore a *simple lymphoma*.

Presented by Professor W. J. Palmer.

146. A glandular tumour removed from the left side of the neck of a native boy, aged 11 years. Duration of the growth five months. The glands on the right side of the neck were also enlarged.

The tumour consists of a mass of lymph-glands varyingly hypertrophied; a few solitary, the majority grouped together so as to form a lobulated mass, the size of one's fist. The latter are bound together by loose connective tissue. The largest growth is the size of a potato, the smallest about that of a pea. All, on section, are found to be more or less cheesy.

Microscopic examination reveals a purely lymphoid or adenoid structure, with opacity, granular fatty degeneration, &c., corresponding to the degree of caseation in different parts of the gland. The growth is a *simple lymphoma*.

Presented by Professor D. O'C. Raye.

147. A preparation showing a very large lobulated growth involving the soft parts beneath the skin at the bend of the right elbow. It affects also the joint, the ligaments of which are softened and partially disorganised, and the osseous structures laid bare and roughened. The tumour is somewhat oval in shape, about six inches in length, and four inches in breadth. The skin and subcutaneous cellular tissue of the forearm and hand exhibit a brawny thickened condition, which culminates in the formation of a more circumscribed tumour-like swelling over the posterior aspect of the ring and little fingers. The main growth is soft, and on section, either smooth and homogeneous, or but slightly fibroid, and has an obscurely nodulated appearance.

On microscopic examination it is lymphoid in structure, consisting of a delicate connective tissue framework or small-meshed reticulum, in which are lodged small, round, nucleated cells, of the size and general appearance of leucocytes.

The tumour-like swelling over the back of the hand has a less distinct structure, is more fibrous, and shows free infiltration with fat globules and granules, the remains of red blood cells, and pigment matter; a condition of parts indicating, apparently, prolonged œdema with pseudo-hypertrophy of the skin and subcuticular structures, and perhaps due to obstruction of the lymphatic circulation by the growth at the bend of the elbow, which probably originated in the lymph-glands here, but has subsequently extended to, and implicated, all the surrounding soft structures—(? *lymphadenoma*). No history.

Presented by Professor J. Jackson.

148. “An intra-thoracic tumour, from an Armenian (John Pogose) aged 32.”

“The great mass of the tumour is situated between the arch of the aorta in front, and the right bronchus and its main branches behind. It embraces the innominate artery and the thoracic portion of the left common carotid. Above, it reaches the right subclavian artery, and involves the right recurrent laryngeal nerve. Below, it descends behind the arch of the aorta, hooking round it, and encroaching upon the left recurrent laryngeal nerve. Tracheotomy was performed on account of extreme dyspnoea.”

The tumour is highly lobulated; on section somewhat soft. Its structure, microscopically, is lymphoid, and consists of well-defined, small, nucleated cells, held together by a scanty, small-meshed, connective tissue reticulum.

It has probably originated in the mediastinal lymph-glands, but after a time has passed beyond them, infiltrating the surrounding structures as above described. It is undoubtedly a lymphadenoma (*lympho-sarcoma* of Virchow).

Presented by Professor J. Fayrer.

149. Lymphadenoma or Hodgkin's disease. A large tumour occupying almost the whole of the anterior mediastinum (a little to the right of the median-line), and sending forward a rounded prolongation, which lay beneath the left sterno-clavicular articulation.

The pericardium, both pleuræ (but especially the right) the bronchial glands, and all other adjacent structures, were more or less infiltrated by material similar to that composing the main growth. The latter has a smooth surface, a lobulated outline; soft consistency; and, on section, a dull greyish-white colour. The incised surface is mapped out into rounded or ovoid nodules, of various sizes, and thus presents a distinctly glandular appearance.

On microscopical examination, (when thin sections are made, and carefully brushed out under water), a very typical lymphoid or adenoid structure is displayed,—a delicate, small-meshed, connective tissue stroma, with small, round or slightly oval, nucleated cells; two or three contained in each interfibrillar space. The cells are uniform in size and shape, and exhibit no processes or prolongations.

An exactly similar structure is displayed by all the surrounding infiltrations of the adjacent parts above described.

The specimen was taken from a Hindu boy aged 11 years. Two months prior to his admission into hospital he noticed an enlargement of the left axillary glands, following upon an attack of "fever." The submaxillary next enlarged. Then (a month ago) he began to experience difficulty in breathing. This gradually increased, as well as the hypertrophy of the axillary, submaxillary, and latterly, of the cervical glands.

The superficial veins of the neck, chest, and abdomen were unusually prominent, full, and tortuous. Marked dulness on percussion was elicited over the whole of the front of the thorax, in the right lateral region, and left inter-scapular space. Respiration over all those parts was weak or absent, and the vocal resonance increased; in the left front and left lateral regions the breathing was puerile. He died rapidly from asphyxia and exhaustion.

The right pleura was found, after death, nearly filled with thin, greenish-yellow, sero-purulent fluid. The mesenteric and lumbar glands were specifically enlarged. The spleen was slightly hypertrophied, but free from all morbid infiltration.

150, 151, 152. The mesenteric, axillary, and left submaxillary glands from the above case of lymphadenoma, showing morbid hypertrophy or homologous overgrowth, associated with the development of the large mediastinal tumour.

153. A large mass (the size of a cocoanut) of diseased mesenteric, lumbar, and post-peritoneal glands, including portions also of the abdominal aorta, vena cava inferior, pancreas, ileum, &c., inseparably connected with the same, the whole occupying the umbilical, hypogastric, right lumbar, and inguinal regions of the abdominal cavity, and thus almost completely filling it.

From a native male (Mahomedan), aged 30, who died in hospital. Some of the mesenteric glands are enlarged to the size of a hen's egg. Their consistency, as well as that of the surrounding infiltrated structures, is soft, and the colour a greyish-pink (in the fresh state). Microscopic examination reveals homologous overgrowth,—a rapid hyperplasia of the normal adenoid tissue of the glandular structures involved, with infiltration and matting together of the adjacent tissues by similar material. Some of the diseased glands show partial softening from fatty and mucoid changes,—(lymphadenoma).

154. The spleen from the above case. It is much enlarged (weighing $35\frac{1}{2}$ ounces), pigmented, and infiltrated with nodules of pearly or pinkish-white material, consisting, under the microscope, of round nucleated cells, some the size of, others larger than, leucocytes, with a scanty and indistinct intercellular substance (often quite wanting), heaped up in large nodules or smaller granules,—looking like boiled tapioca-grains, and indicating, very clearly, a hyperplastic condition of the normal adenoid tissue (Malpighian bodies, &c.) of the affected organ.

155. Two portions of the small intestine, viz., the duodenum and part of the jejunum, from the same case, showing a small whitish

nodular or granular infiltration of the mucous membrane. The glandular structures and the submucous adenoid tissue in their vicinity are involved. The nodules are of the size and consistency of boiled tapioca-grains. A similar condition of the whole of the small intestine and of the cœcum was found, and the microscopic structure of the little growths is identical with that of the morbid infiltration affecting the spleen and mesenteric glands above described.

- 156.** Two groups of enlarged and infiltrated lymphatic glands, from the same case of Hodgkin's disease. Each is about the size of one's fist, and was found on either side of the neck, extending from the base of the skull to beneath the clavicle, surrounding the common carotid sheath, burrowing deeply into the surrounding tissues, and in parts intimately adherent to the superjacent skin. These glands vary in size from that of a walnut to that of a pea; are soft, of whitish or pinkish-white colour, and bound together by a varying quantity of condensed and infiltrated connective tissue.

Similarly enlarged and infiltrated glands were found in the axillæ, and in both groins.

The patient from whom these four preparations (Nos. 153—156) were taken, *post mortem*, was a Mahomedan coolie, aged 30, admitted into hospital in a very anæmic and emaciated condition on the 19th December 1879. He died from exhaustion on the 31st of the same month. The case is a typical one of *lymphadenoma or Hodgkin's disease*. Its duration was about five months. (See further, "Medical *Post-mortem* Records," vol. III, 1879, pp. 383-86.)

- 157.** "An innocent epithelial growth of the leg, of six years' standing. It presents a number of small nodular protuberances. It is about four and-a-half inches in length and three and-a-half in breadth. Its general surface is raised from a half to three-quarters of an inch above that of the surrounding integument. The excrescences are of a reddish-brown colour. The neighbouring skin is almost wholly destitute of pigment. The growth increased more rapidly during the six months prior to its successful removal than during any previous period of similar duration." (Ewart.) The growth is of warty character, and apparently entirely confined to the superficial (integumental) structures.

Presented by Dr. F. Murray, of Beerbroom.

- 158.** "Syphilitic warts removed from the perineum." (Ewart.)

- 159.** "An epithelial tumour" (warty growth) "of the prepuce and adjoining integument. Section demonstrates the disposition of the condylomatous excrescences of which it is constituted." (Ewart.)

Presented by Mr. C. Chowdry.

- 160.** "A horny growth, about four inches in length, half an inch thick at the apex, and an inch thick at the base, and slightly curved near the central part. Removed from the posterior portion of the thigh of a patient in the native hospital." (Ewart.)

Presented by Professor Allan Webb.

161. Melanosis of the sole of the left foot of a native, aged 50, removed on the 13th of May, discharged with the wound healed on 1st July 1863." (Ewart.) This is a warty growth, not a cancerous tumour, and the only peculiarity consists in its being darkly pigmented. The pigment-matter is granular in character, is deposited especially in the hypertrophied rete mucosum, but also infiltrates some of the connective tissue in the sub-epithelial layer of the warty structure.

Presented by Professor J. Fayrer.

162. "Large warty growth, removed from above the clitoris in two portions. It was of twelve months' duration, and occurred in a prostitute, aged 40, who suffered from secondary syphilis. Its peduncle embraced the anterior commissure of the nymphæ, the right side of the clitoris, and the prepuce. It was removed by ligature." (Colles.)

Presented by Honorary Assistant Surgeon P. A. Minas, Civil Surgeon, Hissar.

163. A warty growth, the size of a hazelnut, removed from the left popliteal space of an Eurasian gentleman. It was of long standing, and produced no inconvenience until the surface became ulcerated. A thin sanious discharge now issued from the little tumour, and a good deal of pain was felt whenever, by accident, it was sharply touched or compressed. The glands in the groin also began to enlarge. The growth is entirely warty. On section, a series of papillary elevations succeed each other from the base to its rounded summit. Towards the central part softening has taken place, resulting in the formation of small sebaceous-like cysts. The vascular supply at the short pedicle and throughout the greater portion of the tumour is very abundant. There is no extension of the epithelial proliferation into the subcuticular structures.

164. "Amputation of the glans penis for a malignant-looking growth." This is a large cauliflower-like growth, forming a raised and warty coronet round the glans penis. The glans is uncovered owing to bygone circumcision, and its substance is only partially involved. The growth springs from the skin of the penis at the coronary fossa. It is distinctly warty in character—a series of superimposed, compound, papillary excrescences, which have a dull-white colour, are very soft and friable, and composed chiefly of epithelium. The epithelial cells are of large size, nucleated, and fatty. They are very diversified in shape—some round or oval, others linear and much drawn out from compression; and a few "nests" are also found.

Towards the basal portion of the growth, dilated capillary vessels can be traced entering into its structure for a short distance. The subpapillary layer of the cutis is not involved; there appears to be no tendency to a downward burrowing of the epithelial proliferation. The urethral canal is still patent, and the greater part of the proper structure of the glans shows no evidences

of morbid infiltration. The growth is a *papilloma*, not an epithelioma.

“From a native male patient, aged 45. Said to be of twelve months’ duration.”

Presented by Professor W. J. Palmer.

- 165.** Villous, warty, and pigmented growths, removed from the anal orifice of a native male child, aged six years. “They were said to be of two years’ standing, and bled frequently.”

Presented by Professor D. O’C. Raye.

- 166.** A small papillary tumour of the ocular conjunctiva. The growth is soft, villous in appearance, and about the size of a hazelnut. It grows from the mucous membrane (ocular conjunctiva) close to the margin of the cornea, a portion of which is overlapped by some of the delicate fringes of the same.

Microscopically, the little tumour is found to consist of delicate papillary formations conjoined in groups; they possess a scanty basis of connective tissue, in which are minute ramifying blood-vessels; and an epithelial investment, two to three lines in thickness, composed of rounded and flattened nucleated cells, superimposed and closely interlocked.

The growth was supposed to be an epithelioma; it is, however, a simple warty structure.

- 167.** “A section of the skull, with a tumour” (psammoma) “situated in the left middle fossa, over the dura mater covering that part. The patient, (Mrs. B.), aged 41, died in the General Hospital. She had always been temperate in habits, and had enjoyed good health until two years ago, when she became subject to attacks of hysteria, which generally came on at night. At this time her menstruation became very irregular. About five years ago her eyesight became affected, and she began to lose the power of her limbs. She also appears to have had some difficulty in making water. When spoken to, she could not comprehend questions, not from deafness, but from inability to collect her ideas.”

The growth consists of a flattened ovoid tumour, a little larger than a pigeon’s egg, which has developed from the inner surface of the dura mater in the situation described. It is soft and doughy in consistency; slightly granular on section; of a brownish colour.

Under the microscope it consists of flattened fibres of connective tissue, largely interspersed with epithelial cells, many of which are flattened or elongated, and also form spheres or “nests,” and are associated with small corpora amylacea, and large-sized thin-walled capillaries. The little tumour may therefore be regarded as a *psammoma*.

Presented by Dr. S. C. Maekenzie, Presidency General Hospital, Calcutta.

- 168.** A papillary growth, the size of a nutmeg, attached to the inner surface of the dura mater which lined the left occipital fossa. It was found *post mortem*, on examining the body of a European seaman, aged 38, who died in hospital from cholera. The brain substance beneath the growth was quite healthy.

Examined microscopically, the little tumour consists of fine fibrous tissue, in which are imbedded numbers of corpora amylacea and minute calcareous particles. The arrangement of structure is papillary. The papillæ are supplied with delicate capillaries, and invested by a thin layer of epithelium. The growth is a *psammoma* (of Virehow) or *serous papilloma*.

169. A tumour, about the size of half a walnut, found occupying the "sella tureica" at the base of the skull, being adherent to the dura mater above, and excavating and producing caries of the bone below. It has a brownish colour, and a soft sabulous consistency. It appears to be an abnormal enlargement of the pituitary body normally lodged in this situation.

The deeper or central portion of the little tumour is composed of a series of minute lobules, bound together by very delicate connective tissue. Each lobule is made up of plump, darkly granular, nucleated cells. The peripheral portions of the growth are villous in character, and consist of large epithelial cells, with bright distinct nuclei, forming a series of papillary excrescences or tufts, which are very soft and readily broken down. In the deeper parts of the growth blood-vessels are numerous and large, and here and there, scattered in an irregular manner, are rounded or slightly oval opaque bodies—probably corpora amylacea. On the whole, therefore, the structure of the growth conforms most closely with that of the *serous papillomata*,—so-called *psammomata*.

From an aboriginal New Zealander (Maori), who died in hospital. (See further, "Medical *Post-mortem* Records," vol. II, 1877, pp. 569-70.)

170. A portion of the dura mater of the spinal cord, with a small tumour developing from its inner surface. The growth is a little larger than a bean: it was found at about the level of the second dorsal vertebra. The base is broad,—the surface papillated. It presents a somewhat villous appearance, and is very soft and granular.

Under the microscope, a very delicate fibro-nucleated tissue composes the bulk of the little growth, imbedded in which are rounded or oval laminated bodies,—corpora amylacea, in great abundance. It is therefore a *psammoma*.

Found on *post-mortem* examination of the body of a native male, aged 30, who died in hospital from tetanus (apparently idiopathic). There was no evidence of pressure upon the cord by the little tumour, but fixed pain in the back, between the scapulæ, was complained of during life. (See further, "Medical *Post-mortem* Records," vol. II, 1878, pp. 837-38.)

171. The choroid plexuses from the lateral ventricles of the brain of an East Indian (male) patient, who died from chronic bronchitis, &c. Attached to the same are two small growths, about the size of hazelnuts. They are firm and fibrous-looking on section, and in parts distinctly calcareous.

When more minutely examined, and especially in microscopic sections, a large number of opaque, concentric or laminated bodies come into view—corpora amylacea; and, together with these, other similarly laminated, but softer, nest-like structures, composed apparently of elongated epithelial, or spindle-celled connective

tissue, elements. The normal capillary loops and supporting tissue of the plexuses are exaggerated. The growths described appear to be small *psammomata*.

172. Two small psammomata developing from the choroid plexus in each lateral ventricle of the brain.

The structure of these small tumours is quite typical, consisting of fine, closely-woven, connective tissue, forming papillary-like sprouts, in which lie a few delicate capillary vessels, a large number of corpora amylacea of different sizes, a few free nuclei, and some small round cells.

From a native male, (Mahomedan), aged 35, who died from empyema. ("Medical *Post-mortem* Records," vol. III, 1879, pp. 325-26).

173. A similar preparation. Two psammomata (each about the size of a small hazelnut) found in the posterior cornua of the respective lateral ventricles, and developing from the choroid plexuses in these situations.

Found on *post-mortem* examination of the brain of a native male patient, aged 52, who died of pneumonia.

174. Adenoma of the mamma. The tumour is about the size of one's fist. The nipple and superjacent skin are not affected.

On section it is soft, lobulated, and of a brownish-yellow colour,—has an exaggerated glandular appearance, and, under the microscope, shows a purely homologous structure. Large acini and tubules are found, filled with fatty degenerating epithelial cells, and united by broad bands of connective tissue infiltrated freely with fatty granules and globules, but exhibiting no new cell growth or differentiation into stroma, &c. No history.

175. A chronic mammary glandular tumour (adenoma). A portion of the skin on one side of the tumour is ulcerated, and a fungoid protrusion of the latter (about the size of half a walnut) has taken place at this spot. The rest of the growth is moderately firm, markedly lobulated, and has the characteristic pseudo-cystic appearance of so many of this class of tumours of the breast. The "cysts" vary in size from that of a hen's egg to that of a pea, and are filled with solid-looking dendritic vegetations. These, under the microscope, are seen to be composed of acini and lactiferous tubules blocked, distended, and distorted by degenerating epithelial elements. The "cystic" growths are bound together by dense-white fibrous tissue, free from all abnormal cell-growth.

176. A large lobulated tumour of the mamma. A portion of the growth protrudes through the skin in the form of a huge gelatinous-looking, fungoid mass. On incising the tumour its true character is revealed, consisting, as it does, of a series of acini or cyst-like spaces, varying in size from a split-pea to a hen's egg, and occupied by more or less solid-looking—in parts quite dendritic—growths. The external fungating mass has a similar structure, though here the acini are less distinct, and the fibro-cellular tissue, of which it is mainly composed, is found (under the microscope) very delicate, highly nucleated, and much of it undergoing mucoid transformation. With the

exception of this part, the consistency of the tumour is remarkably solid and firm, and its structure is almost purely glandular (adenomatous).

177. Fungating adenoma of the female breast. It is said to be a growth of three years' duration, and ulcerated through the skin about twelve months prior to operation. "The axillary glands were not enlarged."

The preparation consists of the greater part of the right mamma, exhibiting on the outer side of the nipple a large fungating mass,—a series of soft, succulent nodules, of whitish-brown colour, separated from each other by deep fissures. The nipple is not involved:—it is large and prominent. Below the level of the skin the gland-substance is found somewhat atrophied, but presenting a lobulated appearance—*i.e.*, large acini occupied by semi-solid pinkish-white material, which can readily be squeezed out of them. The acini are connected by bands of white fibrous tissue. Towards the centre the altered gland-structure has undergone mucoid softening, and near the base one nodule shows caseous transformation.

On microscopic examination, the subcutaneous portion of the tumour exhibits a purely adenomatous structure, consisting of dilated acini, filled with degenerating epithelial elements. Above the skin, the fungoid portion of the growth is composed of delicate connective tissue, in parts very abundantly infiltrated with small round nucleated cells, in others undergoing mucoid degeneration.

On the whole, the histological characters of the tumour are such as belong to no malignant growth. It seems highly probable that, commencing as a simple adenoma of the gland, the skin has accidentally become involved and ulcerated; that thenceforth the tumour-tissue has assumed an exuberant fungoid condition, but with no marked or specific alteration of the original structure.

From a native male aged about 43.

Presented by Professor S. B. Partridge.

178. An acinous adenoma of the parotid gland. The tumour is slightly lobulated, and has a well-defined capsule of connective tissue, from which prolongations or dissepiments pass inwards, intersecting the growth in various directions, and forming lobules or acini, many of which are large enough to be readily recognised with the naked eye. The majority, however, are microscopic, and all contain a soft, granular substance, consisting of round or spheroidal epithelial cells, in various degrees of proliferation and subsequent degeneration. No history.

179. An adenomatous tumour, the size of an orange, removed "from the internal and inferior angle of the left orbit of a woman aged 38 years." The consistency of the growth is moderately firm. The structure consists of a series of very small rounded acini, the walls of which are composed of delicate fibro-elastic tissue, and which contain epithelial cells,—mostly pale, atrophied, and withered; and granular fatty material in great abundance.

Presented by Professor J. Fayer.

- 180.** Adenoma of the right ovary. The whole organ is hypertrophied, and presents a lobulated outline. One large (size of a nutmeg) and several smaller growths are seen imbedded in the stroma. They all appear to be circumscribed developments from the Graafian follicles or *gland structure proper* of the organ; and, on microscopic examination, consist of larger and smaller acini filled with highly granular and fatty epithelium, *i.e.*, a hyperplasia or proliferation of the normal lining of these follicles. In some, the epithelium has almost completely disappeared, a fatty *débris* alone distending the dilated and distorted acini. The latter are bound together by delicate connective tissue with nuclei and embryonic cells.

These growths are very similar in structure to the localised overgrowths of the mammary gland constituting the adenomata of that organ, and hence may be regarded as analogous new formations.

[A myoma, the size of a sparrow's egg, may be seen developing from the posterior surface of the fundus uteri, forming a projecting nodule just beneath the peritoneal investment of the organ.]

Found on *post-mortem* examination of the body of an East Indian woman, who died from heart disease, &c. (*See further, "Medical Post-mortem Records,"* vol. II, 1878, pp. 879-80.)

- 181.** A little oval-shaped tumour, the size of a pigeon's egg, removed from the inner canthus of the left eye of a native male out-patient, aged 35. On section it is opaque and fibrous-looking at the periphery, and composed here of white fibrous tissue, abundantly nucleated. Partitions or septa are seen passing inwards from this, so as to divide the tumour substance into a series of lobules, which have a brownish or greyish colour, and make up the bulk of the growth. This lobular structure exhibits, under the microscope, a distinctly *glandular* character, being composed of small tubules lined by spheroidal or rounded epithelium in a state of proliferation and fatty metamorphosis. The little growth, appears, therefore, to have resulted from an abnormal hyperplasia of the secreting or gland follicles of the part (the mucous follicles of the caruncula lachrymalis), and may therefore probably be regarded as a *tubular adenoma*.

Presented by Dr. E. Lawrie.

- 182.** The stomach of an "Ameriean ship's Captain" who died in the General Hospital from dysentery. The mucous membrane generally is thickened, and presents a very curious warty condition, from the presence of a large number of small soft rounded growths which project from its surface. These are most plentiful and largest along the greater curvature, and near the pylorus. Over 150 have been counted. They vary in size from a small pea to a hazelnut; are invested by the common mucous membrane of the stomach, and with it are movable upon the submucous tissues.

Examined microscopically, each little growth shows, at the periphery, a minutely papillated conformation, the papillæ being covered by a thin layer of cylindriform or columnar epithelium. Below

this are found the tubular mucous glands or follicles of the stomach in an hypertrophied condition,—clongated, and irregularly dilated or expanded, especially at their bases. The gland tubules are filled with proliferating epithelium, in many cases highly fatty, in more, perhaps, glistening from mucoid metamorphosis, and here and there breaking down into small mucoid cysts, in which only the fragments or remains of degenerated epithelial cells are to be distinguished. The tubules are held together by connective tissue, which is abundantly nucleated, and contains large-sized capillary vessels. Each of the little tumours is purely glandular in structure, and may be regarded as a *tubular adenoma*. It is said that the patient was a great drunkard.

Presented by Mr. J. H. V. Flemming, Sub-Medical Department, General Hospital, Calcutta.

183. "Section of a small scirrhus tumour of the right mamma of a native aged 40 years. It is of stony hardness." The fibrous character of the growth is well seen.

184. "Scirrhus of the left mamma, about the size of an orange, and of six months' duration. The patient was 35 years old. The growth was removed on the 23rd November 1863, and the woman discharged on the 29th December." (Ewart.)

On microscopic examination, the stroma is found well-formed and fibrous; the cells rounded and slightly irregular (polymorphous), have large nuclei and a granular protoplasm. They are grouped within the alveoli of the stroma in great abundance, and are also seen disposed, somewhat linearly, in slits formed by the connective tissue, on the outskirts of the growth. The nipple is retracted. The cut surface of the tumour is remarkably fibrous, and even cicatricial-like in parts, and its consistency is everywhere most dense and hard. (J. F. P. McC.)

Presented by Professor J. Fayrer.

185. Scirrhus of the female breast, showing deep ulceration of the superjacent skin, extending into the substance of the growth for nearly an inch. The tumour-tissue is very hard and firm, and is found extending into the surrounding cellulo-adipose tissue. The structure, microscopically, is quite typical of scirrhus cancer. The stroma is exceedingly dense, and the alveoli well-formed. No history.

186. Scirrhus carcinoma of the right breast; said to be a growth of two years. From a European female aged 42.

The tumour is irregularly rounded in outline, slightly lobulated, and rather larger than a walnut. It involves the portion of the gland situated just beneath the nipple. The latter is tumefied and turgid, but not retracted, and the surrounding and superjacent skin, although adherent to the growth, is not ulcerated. The tumour is very hard and resistant to the feel, and creaks on section; has a reddish or pinkish-white fibroid appearance, and, under the microscope, presents all the characteristics of true scirrhus cancer.

The peripheral lobules of the gland are highly infiltrated with fat, so that scarcely any trace of their normal (acinous) structure is distinguishable. Into this fatty tissue prolongations from the main growth may be traced,—consisting of embryonic proliferating cells and nuclei.

Presented by Professor S. B. Partridge.

- 187.** Scirrhous of the left mamma. The growth occupies that portion of the gland which lies just below the nipple, and for a space of about an inch and a half around the same. The skin, for this distance, is intimately adherent to the tumour, and cannot be moved in any way upon it. The nipple itself is flattened and retracted, and one or two narrow furrows are seen in the skin starting from this spot and producing a dimpling of the surface. The tumour is irregularly and slightly lobulated, and is seen on section to involve the whole antero-posterior thickness of the gland, burrowing also into the surrounding cellulo-adipose tissue. It cuts like cartilage, is intensely hard, firm, and resistant. In appearance is fibrous—of a dense white colour, and very cicatricial towards its centre.

Sections from this part reveal, under the microscope, very little else than closely-woven, thick, white fibrous tissue, with a few elastic filaments, and much fatty, pigmentary, and granular matter; only here and there can traces of highly degenerate, fatty, closely packed, epithelial elements be observed; but sections from the periphery exhibit a greater or more abundant *cellular* proliferation; yet even here the stroma is most dense and well-marked. The epithelial cells,—found in conglomerate masses,—are polymorphous, mostly round or angular, highly fatty. An abundant small-celled or nuclear growth is seen insinuating itself widely between the muscular fasciculi of the pectorals (fragments attached to and removed with the growth), and into the surrounding adipose tissue. The tumour is undoubtedly scirrhous,—very typically hard, fibrous, and cicatricial, and shows evidences of *comparatively* slow growth.

Presented by Professor T. E. Charles.

- 188.** Carcinoma of the right breast. “From a Mahomedan female, the mother of two children. The growth is of twelve months’ duration, and was painful, but there was no marked cachexia. Catamenia regular. No hereditary taint.”

The preparation exhibits the whole of the breast as removed by operation. The skin is much involved, showing an irregular-outlined, unhealthy-looking ulcer, with deeply eroded margins, situated just below the nipple. The latter is retracted, superficially excoriated, and surrounded by a raised and tuberculated rampart of diseased tissue. The whole gland seems to be implicated. It is atrophied, has a brownish-white fibrous appearance, cuts firmly, and feels hard and stony. There is no definite boundary to the morbid growth; it invades the skin above and the pectoral muscles below (fragments having been removed with the breast).

On microscopic examination, all the characters of true *scirrhous* carcinoma are well displayed, and the stages of development of the growth can be traced in even a single section. Both stroma and cells are particularly well-marked.

The subjacent muscular and cellulo-adipose tissues are found partially invaded by germinating cells and nuclei.

Presented by Professor Gayer.

189. Scirrhous tumour of the left mamma. From an East Indian female, aged 42.

"History. The patient is the mother of six children, of whom the youngest, aged 6 years, is alone alive. Noticed a small nodule in the left breast, a little above the nipple, about a year ago. It was not painful at first, but has become so during the last three months. The glands in the axilla are not at all enlarged. There is marked retraction of the nipple. General health pretty good. Menstruation regular. No history of syphilis."

The tumour, consisting of the diseased gland, the superjacent integument, and the subjacent cellulo-adipose tissue (with a few fragments of the pectoral muscles), forms a mass of oval shape, the size of a small orange. The nipple is a good deal retracted, and the skin around it puckered and contracted. No ulceration exists. The growth is nodulated, very hard and firm. Fibrous, and yellowish-white on section.

Examined microscopically, the structure is very typically that of *scirrhous cancer*, though at a somewhat early stage of development. The acini and lactiferous tubules of the gland are thickly filled with small, round or slightly angular, nucleated cells, which also infiltrate the connective tissue for a variable distance around these structures, and are seen in some sections to be still further prolonged, in radiating lines of nuclei (within the lymphatic channels) into the adjacent cellulo-adipose tissue. The gradual transformation of the glandular connective tissue into cancer-stroma is also very clearly displayed in some sections.

Presented by Professor Gayer.

190. Tumour of the right mamma. From a European female, aged about 38 years.

The whole of the breast was excised, and is preserved. The nipple is seen to be enlarged, rugose, and retracted; the areola much wrinkled, but not ulcerated. On incision, from a quarter to half an inch of fat exists beneath the skin (except just below the nipple). The gland-substance is moderately firm (not hard) in consistency, of a greyish-pink colour, and more wasted-looking than normal.

Microscopic sections exhibit all the characteristics of true *scirrhous carcinoma*. The stroma and cells are both well-formed, the latter in great abundance, and displaying both rapid proliferation and granular fatty degeneration.

Small cells or nuclei are seen to branch out into the connective tissue spaces surrounding the cancerous growth. The tumour is a rapidly developing scirrhous cancer.

Presented by Professor T. E. Charles.

191. Cancer of the breast, removed from a native female, aged 40.

"The tumour is of one year's growth. The first indication noticed was a hard nodule, the size of a betelnut, on the outer side of the mamma. It was rather tardy in its progress during the first ten months, but since then has increased rapidly. The skin over the tumour is adherent, and has a somewhat dusky hue. There is complete retraction of the nipple. The

axillary glands on the affected side were distinctly enlarged and swollen. There was little or no pain at first, but the patient suffered excruciating torture during the latter period of the growth. No history of family predisposition to carcinomatous affections."

This is a very rapidly developing scirrhus cancer of the mamma. The whole gland is hypertrophied, but only that portion immediately beneath the nipple, and consisting of a nodule about the size of an orange, shows marked specific changes under the microscope; these are very characteristic. The consistency is firm, but not so dense and resistant as is usual in scirrhus. In sections examined, the cell proliferation is exceedingly abundant; the stroma well formed, but scarcely so broad and perfect as ordinarily met with. The alveoli are distinct; crowded with polymorphous nucleated cells,—the prevailing type, however, being round or oval. All exhibit granular fatty degeneration. The axillary glands—removed at the same time as the breast, but not preserved—were indurated and slightly enlarged; showed irritative hyperplasia of both stroma and cells, and, in parts, an epithelial-like transformation of the latter, indicative of commencing cancerous infiltration.

Presented by Professor K. McLeod.

192. A scirrhus tumour of the right breast. From a native female (Hindu), aged 40 years. "It had been growing for the last eight months." The skin over the mamma is considerably involved, as were also two axillary glands (not preserved), which were removed at the time of the operation.

The morbid growth implicates almost the whole gland. The nipple is retracted; the skin around it nodulated and superficially ulcerated. On making a longitudinal section through the mamma, the central portion of the gland is found very soft, pulpy, broken down into a pulsataceous, pinkish-white, flocculent *débris*. Around this are nodules of the same colour, but firm and fibrous-looking. Sections taken from these exhibit a true scirrhus structure, but both cell elements and stroma are much disorganised and disintegrated from very extensive fatty degeneration. The gland-tubules as well as the acini are involved in the growth; and, at the base of the mamma, the pectoral muscles and cellulose-adipose tissue here situated are thickened and infiltrated with cancerous germs.

Presented by Assistant-Surgeon Ram Moy Rai, Bhowanipore Dispensary, Calcutta.

193. Recurrent scirrhus of the mamma. The preparation shows the return of scirrhus growth in the cicatrix left by the first operation, and in the adjacent sub-integumental structures. The whole of the mamma was removed nine months prior to this second operation. On microscopic examination, the diseased cicatrix now exhibits (*a*) an abundance of nucleated white fibrous tissue, combined with a few elastic filaments; (*b*) much fat, globular and molecular; (*c*) a series of scattered depôts composed of round or oval nucleated cells, from which, as separate centres, small cells or nuclei are seen radiating in all directions into the surrounding connective tissue. There seems therefore to be no doubt as to the return of the growth. (See also next prep., No. 194.)

194. Recurrent scirrhus cancer, from the same case as the preceding preparation. A nodule of partly cicatricial, partly cancerous, tissue is preserved. It was removed about four months after the second operation—described above (see prep. No. 193). On microscopic examination, firm white fibrous tissue is found, with looser or laxer connective tissue abundantly infiltrated with nuclei; and scattered small deposits of epithelial cells (with large round distinct nuclei) arranged in parallel rows in the meshes of a well-defined stroma. A large amount of fat in the form of lobules, free granules, and infiltrating molecules, makes up the rest of this recurrent growth. The cancer germs left after the second operation have proliferated in and near the cicatrix, and have spread even more widely than before.

The patient did not long survive this third operation. After death, small cancerous nodules were found in the liver, and displayed a very typical structure.

The history of this case is interesting. The patient was a European female aged 51. Amputation of the breast for scirrhus of three months' duration was performed on the 30th September 1875; the growth recurred (prep. No. 193), and was removed again on the 29th June 1876; a second recurrence took place *in situ*, and necessitated a third operation on the 21st October 1876. Soon after which she died, and secondary deposits were found in the liver on *post-mortem* examination. The total duration of the disease was, therefore, about sixteen months. (J. F. P. MeC.)

Presented by Professor S. B. Partridge.

195. "A fungating medullary tumour of the right female mamma of one year's duration. Behind, in the centre of the breast, it has undergone softening, degeneration, and conversion into a cavity." (Ewart.)

Presented by Professor J. Fayrer.

196. "A medullary tumour removed from the breast. In some portions its section presents a fine spongy appearance. There is a melanotic discolouration of the skin in the immediate vicinity of the nipple." (Ewart.) The latter is due to the formation of a superficial slough in this situation.

The microscopical structure of the growth is that of true encephaloid cancer,—both stroma and cells are typical. (J. F. P. MeC.)

197. "Carcinoma medullare of the ball of the eye, leading to its complete disorganization. The section shows portions of the sclerotic and choroid pigment." (Ewart.)

The tumour on section has a yellowish colour and soft consistency. The growth appears to have developed from the sheath of the optic nerve and sclerotic coat. Its structure, under the microscope, is that of encephaloid carcinoma,—(not glioma).

198. A similar preparation. A small lobulated growth attached to the posterior half of the sclerotic, pressing upon and producing flattening of the eyeball, and complete disorganisation of its contents. Its structure is typically encephaloid—both as regards stroma and cell-elements. No history.

199. "A lobulated medullary tumour of the testis in the inguinal canal." (Ewart.)

The structure is characteristically encephaloid, and the morbid growth most luxuriant. The seminiferous tubules have almost completely disappeared; those that remain are found collapsed, and filled with mere fatty granular *débris*.

Presented by Professor J. Fayrer.

200. "An ulcerating fungus hæmatodes of the left hand. It has been injected. The points at which the injection has escaped indicate the situations where hæmorrhage occurred during the life of the patient." (Ewart.)

201. "An ulcerating and fungating" (encephaloid) "tumour of the left foot. The great toe has been removed. The growth, which is circular, and measures about three inches in diameter, is raised an inch above the skin, and involves the metatarsal bone of the great toe." (Ewart.)

202. Encephaloid tumour of the antrum. It projected from the anterior and right lateral aspects of the root of the nose, just beneath the skin, to which it was firmly adherent, and through which it had ulcerated at a spot corresponding to the inner canthus of the eye. The patient, a native male, aged about 35 years, died from cerebral meningitis and abscess of the brain. The tumour was dissected out *post mortem*. It is seen to be about the size of a turkey's egg, soft, lobulated, brain-like in appearance and consistency. Exhibits all the structural characteristics of encephaloid cancer.

The growth seemed to have originated in the right nostril, proceeding either from the antrum or the right half of the ethmoid, and spreading in various directions. One process or prolongation extended backwards into the pharynx; another forwards, filling the anterior nares; a third occupied the whole of the antrum, and had produced dilatation and bulging of this cavity, with great consequent deformity of the right side of the face; a fourth entered the orbit along its inner wall, displacing the eyeball outwards. The whole of the vomer, the right half of the ethmoid, including its perpendicular plate and cribriform septum, both nasal bones, and the inner wall of the right orbit, had been almost completely absorbed, and by this means the tumour had made its way into the skull, pressing upon the brain and membranes (anterior frontal lobe), and exciting the inflammatory changes which were the immediate cause of death.

203. A malignant tumour of the lower end of the right femur. It is the size of a melon, has a smoothly lobulated outline, and very soft consistency. On a longitudinal section being made through the shaft of the femur, the growth is found to involve its lower third. The shaft and condyles are expanded so greatly that only a thin rim or shell of either osseous tissue or cartilage constitutes the boundary of the growth, and even this is deficient in parts. The whole of the lower extremity is seen hollowed out into a series of huge caverns, with very thin bony partitions, and filled with a soft, pulpy, gelatinous, pinkish or yellowish coloured material, or with fluid blood. The tumour encroaches upon, and has implicated the knee-joint. The epiphysis and shaft of the tibia are not affected, but their cancellous tissue is

abnormally soft and vascular. The whole of the medullary canal of the femur, and even the cancellous tissue of the great trochanter, are infiltrated with soft, reddish, gelatinous material, like that composing the bulk of the tumour. From a Hindu boy, aged 15 years. The disease was of five months' duration. The glands in the groin were enlarged and infiltrated, and there was marked cachexia. During life, distinct pulsation was felt, and an aneurismal-like bruit heard, over the greater part of the tumour. Amputation was performed at the hip-joint.

On microscopic examination, all the characters of a rapidly growing *enkephaloid cancer* are well displayed. Sections taken from different parts of the growth exhibit a highly cellular structure;—the cells are large, polymorphous, and nucleated; they are imbedded in a delicate reticulum, which forms imperfect alveoli. There are numerous free nuclei also, and cells in process of division and endogenous multiplication; blood-vessels are large and plentiful. Portions of the growth are hollowed out so as to form caverns, which are occupied by blood or by colloid material.

As far as can be ascertained by careful examination, the growth has originated within the shaft of the bone,—probably in the medulla at the lower extremity; has then proceeded centrifugally, absorbing and expanding the osseous tissue of the shaft and lower epiphysis, and involving the knee-joint and surrounding soft structures. The tumour is a true *enkephaloid carcinoma*.

Presented by Professor Gayer.

204. Colloid carcinoma. A portion of the great omentum and the right ovary infiltrated with a soft, flickering, jelly-like material, which displays, under the microscope, all the characters of alveolar or colloid cancer. The stroma is soft and spread out, consists of gelatinous connective tissue forming intercommunicating loculi or alveoli of various sizes. These are either entirely filled with colloid—colourless and homogeneous, or exhibit the remains of polymorphous epithelial cells, infiltrated and surrounded by similar material.

Taken from a native female, aged about 40.

Presented by Moulvie Tameez Khan, Khan Bahadoor, Lecturer on Medicine, Campbell Medical School, Sealdah.

205. Colloid carcinoma of the ovaries. Both these organs and the Fallopian tubes are involved in the disease. Two large, globular masses are thus produced;—rather larger on the left than right side. Combined, they filled the hypogastric, inguinal, and umbilical regions, displacing the intestines upwards and to the right. Each growth is invested by the peritoneum, which was highly vascular, injected, of a pinkish or purplish colour.

Each tumour is partially cystic,—the greater portion, however, semi-solid, and on section gelatinous and opalescent in appearance. From a native female, aged 40 years.

Under the microscope the structure is that of true colloid carcinoma,—most typically and distinctly displayed. A well-formed cavernous stroma composed of delicate fibrous tissue, and filled with large polymorphous epithelial cells; the latter imbedded in much gelatinous, flickering, white-of-egg-like material. The colloid substance has varying shades of colour,—from bluish-white to pink and yellow. It swells in water and becomes slightly opaque. Is clear and transparent in glycerine; does not dissolve in, but

becomes more hyaline, on the addition of acetic acid. In parts, blood extravasations of considerable size appear to have taken place, the alveoli containing granular coloured *débris* and hæmatoidin crystals.

(See further, "Medical Post-mortem Records," vol. I, 1875, pp. 807-8.)

206. The whole of the right mamma and the axillary glands (of the same side) removed by amputation and dissection for *colloid carcinoma*. The subject was a native female, aged about 40. The growth was of six months' duration. "The general health of the patient was good, and no family history of cancer existed."

The tumour consists of the right mammary gland with the superjacent skin, and a small portion of the subjacent fatty tissue and pectoral fasciæ. In the former, two ulcerated openings—with a thin intervening bridge of undermined integument—are seen, a little to one side of the nipple. The latter is short and flattened, but not much retracted. Through the ulcerated openings soft, shreddy, tumour-tissue protrudes. On section, the whole of the gland appears to be involved. The central portion and that just beneath the nipple are very soft, almost diffuent, and consist of a series of cyst-like formations, varying in size from a millet-seed to a pigeon's egg, and filled with opaque-white, yellowish or pinkish, semi-fluid (pultaceous) material, having a mucoid or gelatinous consistency. Towards the circumference and base of the tumour the growth is firmer, and the cut surface has even a fibrous appearance, but is also seen to be infiltrated with small cysts, which have glue-like or mucilaginous contents.

The axillary glands which have been removed in mass, and which are found closely matted together, display much more markedly a cystic arrangement of structure. Very little normal gland-tissue remains, but the whole mass consists of a series of cysts, varying in size from that of a sago-grain to that of a hazelnut, and their contents are either semi-solid and pulpy, or quite fluid; in colour, white, pinkish or brown; in consistency, jelly-like or mucoid.

Some of the soft pulpy contents of the mammary cysts being examined microscopically, consist of epithelial cells in great abundance, but mostly degenerate—the nucleus absent, the protoplasm granular or swollen, and infiltrated with transparent glistening globules. Much free semi-transparent material of the same kind, with fat granules and shreds of fibrous tissue are also seen. The epithelial elements are round, oval, angular, variously distorted, and of all sizes.

Sections from the firmer portion of the tumour-substance display all the characters of colloid carcinoma. The alveolar structure—formed by the widening out of spaces in a fibrous stroma—is well developed, and the alveoli are densely crowded with epithelial elements heaped together in an indifferent manner, and suspended in a transparent, homogeneous or but slightly rippled, glue-like or gelatinous material (colloid). Many of the cells are also infiltrated with the same. The cells are polymorphous, and of varying size. A great many are cylindrical, and either separate or in groups of from three to twenty or thirty. Others are squamous and flattened; some quite small. In some the nucleus still persists, or two or three nuclei exist; others are non-nucleated and granular. The stroma is soft and succulent-looking, and is also infiltrated with colloid globules. The lymphatic glands are similarly transformed. The cyst-like cavities are filled with colloid and cell-elements or colloid only. The cell-elements are of transitional character, *i.e.*, from ordinary lymphoid corpuscles to large, infiltrated, epithelial masses.

The specimens afford an excellent illustration of colloid carcinoma of the mamma with secondary infiltration of the nearest lymphatic glands.

Presented by Professor Gayer.

207. "A small epithelial cancer removed from the lower lip of a European sailor, 35 years of age. The growth was of eight years' standing, and it was probably for some years quite innocent in character. The wound healed; but the man soon returned to hospital with a large swelling underneath the angle of the jaw, which proved to be a rapidly developing medullary cancer. This opened, fungated, and caused several attacks of hæmorrhage. The patient died from asthenia, with pulmonic symptoms, and one lung was discovered to be gangrenous." (Ewart.)

This is a little flattened tubercle or button-like elevation, the size of a hazelnut, with a granular papillated surface. It is somewhat constricted at the base, and separated by a narrow but deep groove from the subjacent structures of the lip. Examined microscopically, the structure is truly epitheliomatous, and the mucous glands and muscular tissue of the lip immediately below it are found deeply infiltrated with small round germinating cells. (J. F. P. McC.)

Presented by Professor J. Fayrer.

208. "Epithelial cancer over the middle finger of the left hand in a state of ulceration." (Ewart.) No history.
209. "A cauliflower epithelial tumour of the prepuce, and of a small portion of the integument of the dorsum penis. The anterior part of the glans, in which the meatus urinarius is seen, is free from disease." (Ewart.) No history.
210. "An epithelial cancer of the prepuce. The glans penis and other soft parts remain unaffected." (Ewart.)

Presented by Professor R. O'Shaughnessy.

211. Epithelioma of the prepuce and glans penis forming a villous and tuberculated mass, the size of a small orange. A glass rod indicates the situation of the urethra, the anterior portion of which has been laid open by sloughing of a portion of the glans. The structure is that of true epithelioma, extending deeply into the substance of the glans penis and corona glandis, and also involving the adjacent corpora cavernosa. No history.
212. "An epithelial cancer removed from the lip of an aged native of Hooghly. The growth is about four inches long, two broad, and one inch thick. Its external surface presents a series of excrescences placed against each other like the stones of a pavement." (Ewart.)

Presented by Dr. C. Palmer.

213. A preparation showing a large fungating tumour occupying the soft parts on the anterior aspect of the upper third of the left leg, and reaching down to the tibia below. The fibula (of which only a small portion has been preserved) remains unaffected. The growth possesses all the characters of true epithelioma, - the "nests" being particularly large, and many of them quite visible to the naked eye in sections made through various portions of the

tumour. The latter has probably developed in the skin and subcutaneous tissues, and extended downwards to the bone. The cancellous structure of the upper extremity of the tibia and a portion of the medullary canal are occupied by the morbid growth; the former is softened and partially excavated.

"The disease occurred in a native, 50 years of age, and was of only one year's standing."

Presented by Professor R. O'Shaughnessy.

214. Epithelioma of the scalp. The growth is about four inches in length, and two and a half inches in breadth; has a flattened base, and a remarkably papillated, fungoid-looking surface. The structure, microscopically, is that of true epithelioma. No history.

215. "Portion of the left cheek, and half the body of the corresponding lower jaw, removed for malignant disease, involving the bone and forming a penetrating and fungating ulcer of the cheek. The patient left the hospital well." (Ewart.)

The structure of the growth is typically epitheliomatous. Under the microscope, characteristic epithelial tubules and nests are found, the latter in great abundance. It seems to have commenced or originated in the mucous membrane of the mouth, and to have extended outwards to the skin, and inwards to the bone (lower maxilla). (J. F. P. McC.)

Presented by Professor S. B. Partridge.

216. Epithelioma of the lip. The growth consists of an ulcerated nodule the size of a hazelnut; soft and creamy on section, but firm at the base. Under the microscope it exhibits large epithelial cylinders or columns proceeding from the cutis vera downwards into the subcutaneous tissues; they are composed of large nucleated epithelial cells, irregularly and profusely heaped together, and also forming "globes" or "nests." The sub-integumental connective tissue is freely infiltrated with small round cells and nuclei, indicating active and rapid extension of the growth. "From a native male aged about 40."

Presented by Professor J. Fayrer.

217. Epithelioma of the left foot. From a native (Hindu) male patient, aged 40. The growth occupies a large portion of the sole and inner side of the foot. It has a broadly lobulated and fungoid appearance; is soft and succulent; highly vascular; affects the skin, subcutaneous cellular tissue and plantar fascia, but has not reached the metatarsal or tarsal bones. Under the microscope, it consists of luxuriant epithelial solid tubules and numerous laminated nests, &c.,—a typical epitheliomatous (cancerous) structure.

Presented by Professor J. Fayrer.

218. Epithelial cancer of the skin and subcutaneous tissues of the leg, gradually deepening and involving the bone (tibia), which subsequently fractured from a very slight accident (concussion). From a native male (Mahomedan), aged 45. The patient had suffered from syphilis.

Presented by Professor H. C. Cutcliffe.

219. Epithelioma of the skin. The growth consists of an ulcer the size of the palm of the hand, with raised, irregular, and fungoid margins. It was situated in the left loin, just above the crest of the ilium, and about an inch and a half from the spine. It commenced as a small cutaneous tubercle at this spot, sixteen months prior to removal. During the last two months had ulcerated and spread rapidly.

On microscopical examination, a well-marked epitheliomatous (cancerous) structure is exhibited in all sections taken from the growth. From a Hindu male aged 42.

Presented by Professor H. C. Cutcliffe.

220. A portion of the lower lip of a European (Irishman), aged 65, showing a flattened epitheliomatous growth, partially ulcerated. It is said to have been of only one year's duration. The patient was an inveterate pipe-smoker.

Microscopic examination reveals well marked epithelial columns and nests, with diffuse nuclear infiltration of the subcutaneous cellulo-adipose structures. An indurated and enlarged lymph-gland was removed from below the jaw, and is preserved with the extirpated lip.

Presented by Professor S. B. Partridge.

221. Epithelioma of the penis, of eight months' growth. From a European aged 32.

The anterior half of the penis, which has been amputated, presents a bulbous appearance, and is swollen and enlarged to the size of a small orange. The disease affects chiefly the prepuce, the anterior orifice of which has a very foul ulcerated margin,—the edges everted, hard, and brawny. Within them the expanded and partially ulcerated glans penis is observed, and portions of the same are also protruding through ulcerated openings in the prepuce (which has become more or less adherent) at the level of the corona glandis.

Under the microscope, sections taken from both prepuce and glans penis exhibit very markedly and typically all the characters of true epithelioma. The cuticular hypertrophy is very great in the former, and composed of large, closely packed, mononucleated epithelial cells. These becoming smaller and rounder, are seen to descend in long processes between the papillæ into the true cutis and subcutaneous tissues, and large numbers of epithelial nests are observed in both the superficial and deeper layers of the sections. At the margins of the finger-glove-like prolongations, many small, round, free nuclei are seen, indicating peripheral or lateral growth as well as vertical. In the sections from the glans penis more fibro-elastic tissue is visible, and the "nests" are imbedded in this, and also surrounded by embryonic developing cells. The growth here is highly vascular,—the arteries large and dilated.

Presented by Professor W. J. Palmer.

222. Epithelioma of the penis of about a year and a half's duration. Removed from a native male aged 50. (There was a history of syphilis, and the glands in both groins were enlarged).

This preparation exhibits the glans penis uncovered except below, where a portion of greatly thickened and ulcerated (also partially perforated) prepuce remains adherent. Beyond the glans, involving the whole corona glandis and first inch of the corpora

cavernosa, is an indurated rugged mass of diseased growth. The orifice of the urethra is small; the fossa navicularis almost obliterated; and the urethral canal beyond this narrowed, from encroachment and pressure of the cancerous growth. At this, its densest and most developed situation, the appearance on section is opaque-white, granular, and friable, intermixed with blotchings and stainings from blood extravasation. Microscopically examined, the surface of the growth is found undergoing inflammatory softening and disintegration,—the epithelial proliferation here being largely combined with pus corpuscles and shreddy *débris*. The deeper strata show very characteristic cancerous transformation, *i.e.*, epitheliomatous structure. Large nests, with abundant nuclear proliferation, and a deepening of the papillary layer to form solid epithelial prolongations or processes, which extend into the cutis vera and subcutaneous tissues—are all well marked.

Presented by Professor Gayer.

- 223.** Epithelioma of the scalp, said to be of eight years' duration. The growth was situated a little to the right of the median line of the vertex; it is about the size of the palm of the hand; raised from one-half to three-fourths of an inch above the level of the surrounding skin (scalp); has a fungoid ulcerated surface, and the margins are tuberos and eroded. The growth, with the whole thickness of the scalp (down to and including a small portion of the pericranium) has been removed, and also a margin of healthy-looking integument, about half an inch broad, around its circumference; microscopically, the structure is typically epitheliomatous; the cylinders of epithelium are very large and massive. Below this, there is a nuclear infiltration of the subcutaneous structures, apparently, however, not reaching the pericranium or basal portion of the excised mass. From a native male (Mahomedan), aged 40.

Presented by Professor K. McLeod.

- 224.** Epithelioma of the tongue. From a Hindu male, aged 40. The morbid growth is represented by an irregular-shaped ulcer, about as large as a rupee (florin), situated on the dorsum and left margin of the organ, near its base. The margins of the ulcer are hard and eroded; its surface deeply excavated, and also covered with small, soft, nodular excrescences. The tongue was removed by the chain-écraseur. The ulcer is seen to have been bisected by the first application of this instrument, and a second was therefore rendered necessary in order to include the whole of the morbid tissues. This seems to have been effectual, for microscopic examination of the posterior margin of the last portion (base) of the tongue removed shows no cancerous infiltration,—the muscular and other structures appearing quite healthy.

All the characters of a true and rapidly developing epithelioma are observed in sections taken from the ulcer itself. The epithelial proliferation extends downwards from the mucous membrane and papillæ of the tongue into the subjacent muscular tissue, the fibres of which, in the immediate vicinity of the morbid growth, are found broken down and infiltrated with small round cells and

nuclei. In the superficial strata, and at the margins of the ulcer, the epithelial elements are very abundant, nucleated, heteromorphous, exhibit numerous nests, and in all other respects conform to the usual structure of cancer of this variety (epithelioma).

Presented by Professor K. McLeod.

225. An epitheliomatous ulcer of the tongue. It is about the size of a rupee (florin); has an irregularly rounded outline; and is situated on the right margin of the organ, about midway between its base and apex. The edges of the ulcer are thickened, indurated, hard, eroded. The surface is deeply excavated and sloughy. The sublingual, right submaxillary, and right parotid glands, were all enlarged, indurated and infiltrated.

The tongue was removed *post mortem*. The subject was a Hindu male, aged 34, who died in hospital from exhaustion and inanition. On account of the extent of the morbid growth, and the implication of the neighbouring gland-structures, no operative interference was considered advisable or likely to prolong life.

Sections from the margins and base of the ulcer reveal, under the microscope, a profusely luxuriant epithelial growth, forming solid prolongations into the subjacent muscular tissue of the organ; modification into nests or globes; and all the other characters of true epithelial carcinoma. The intermuscular connective tissue is freely infiltrated with small, round, germinal cells and nuclei, and large ramifying capillary vessels. The muscular tissue is pale and atrophied-looking, but is almost entirely free from fatty metamorphosis, and the transverse markings or striæ are still distinct.

226. Preparation showing an epithelial cancer of the right middle finger of a native (Hindu) male, aged 30. "Its duration is said to have been five months." The finger has been amputated at the carpo-metacarpal articulation. The growth involves the skin and subcutaneous tissues on the palmar and inner aspects of the finger, but does not affect the phalangeal joints or the bones. It takes the form of an oval ulcer, rather larger than a rupee (florin), with eroded and thickened margins, and an irregularly excavated surface.

The structure, microscopically, is typically epitheliomatous. The cell elements are of large size, highly proliferative and fatty; "nests," &c., are abundant.

Presented by Professor D. O'C. Raye.

227. "Portions of an epithelial cancer of the rectum, removed from a native aged 56 years. It presents a somewhat condensed cauliflower appearance, and is soft in consistency." (Ewart.)

The morbid growth chiefly surrounds the anus, affecting the skin and mucous membrane of this part, but is also found to extend upwards into the rectum, and implicates the sphincter muscles and lining membrane. In the external portion there are numerous "nests" and processes (tubules) of proliferating epithelium (squamous or flattened); in the deeper strata, a diffuse nuclear growth with, in parts, proliferation of the *columnar epithelium* of the bowel. (J. F. P. McC.)

Presented by Professor J. Fayrer.

228. Carcinoma of the colon. The preparation exhibits about six inches of the colon, partly laid open, and occupied by a huge fungating mass, which involves all the coats of the bowel, and has here so contracted its calibre that a finger can only with difficulty be forced along its channel.

Microscopic examination shows the structure to be that of *cylindriform or columnar epithelioma*. The cell elements,—though much altered by the long maceration of the specimen in spirit,—still display a sufficiently distinct columnar (epithelial) type, have large nuclei, and are highly granular. These fill the gland-tubules of the mucous membrane (which are abnormally dilated and distorted), and are found also occupying spaces in the submucous connective tissue, which is opened or frayed out so as to form an imperfect stroma. Large numbers of small round cells and nuclei infiltrate the muscular coat (much developed and nodulated in outline), and even reach the peritoneal coat.

The growth on the internal aspect of the gut is deeply ulcerated, and a scraping from here displays large mucoid and granular cells, shred cylindrical epithelium, and fat. No history.

229. Carcinoma of the rectum, with recto-vaginal fistula. From a native female, aged 28, who died in the obstetric wards of the hospital. At a distance of about $2\frac{1}{2}$ " from the anus a large, ragged, ulcerated patch may be observed, stretching right across the bowel. Its margins are abrupt, thickened, and indurated. Its base exposes the muscular coat, which is also much thickened, and presents a semi-gangrenous condition. The upper margin of the ulcer is deeply undermined, so that a finger can be passed upwards and to the left, for about an inch, between it and the peritoneal coat. A communication between the rectum and vagina exists at this spot,—two openings or perforations being found in the posterior vaginal cul-de-sac, just behind the corresponding lip of the os uteri. One of these readily admits a crow-quill, the other the point of a probe. The uterus itself is of normal size, and apparently perfectly healthy. The ovaries are also healthy, but fixed to the sides of the uterus and adjacent bowel by means of old and firm peritonitic adhesions.

The sigmoid flexure and descending colon are enormously distended,—measuring about eight inches in circumference. They were found loaded with soft, clay-coloured, fecal matter. The muscular coat in this portion of the bowel is greatly hypertrophied,—not less than a quarter of an inch in diameter. There were no cancerous deposits in any other part of the body.

Sections made through the whole thickness of the margins and base of the rectal ulcer exhibit, under the microscope, a most luxuriant epithelial growth in the submucous layer; in parts reaching the inner surface of the bowel, but tending chiefly to dip or extend into the deeper-lying structures—the muscular and peritoneal coats. This epithelial growth proceeds principally from the submucous closed gland follicles—solitary glands—here situated, although the simple tubular glands also participate in or contribute towards the same. The epithelial formation takes the shape of huge masses or cylinders of closely-lying, very large, polynucleated cells; some distinctly columnar, others rounded or irregular in outline; the protoplasm

granular and fatty. Here and there, the submucous connective tissue forms a kind of imperfect stroma between the epithelial developments. The rectal ulcer is therefore truly malignant in character,—a specimen of glandular carcinoma or cylindriciform epithelioma.

230. “A very unique specimen of melanosis of the ball of the eye, causing complete disorganization of the organ. The section is now of a chocolate colour.” (Ewart.)

This is a melanotic encephaloid cancer. Examined microscopically, a typical delicate connective tissue stroma, with polymorphous epithelial cells enclosed in its meshes, is readily distinguished. The cells possess large nuclei, and are thickly infiltrated with very dark granular pigment. (J. F. P. McC.)

231. Melanotic epithelioma, the size of a walnut, and forming a flattened but fungoid-looking growth. It developed from the skin of the heel “of a native named Hanjee, who stated that about two years ago the foot at this spot was penetrated by a thorn. This was followed by inflammation and suppuration. A swelling formed, and was incised by a barber, but only blood came away. There was very little pain.” The growth is surrounded by a groove of ulceration at its base. Superficially is convex, and on section smooth, homogeneous, and of a jet black colour. Under the microscope it consists chiefly of large, polymorphous, nucleated, epithelial cells, freely infiltrated with very dark granular pigment matter. Some soft imperfectly formed connective tissue is also found, but no distinct stroma structure. The subcutaneous tissues are sparingly infiltrated.

Presented by Dr. Herbert Baillie.

232. Melanotic carcinoma from the sole of the right foot of a native named Manick, aged 40. The patient stated, on admission into hospital, that about eighteen months ago he first noticed a few small spots of discolouration in the skin of the sole, and a year ago this was followed by a little wart; since then the disease has extended, and assumed a more tumour-like form. He complained of little or no pain except that incidental to the position of the growth and experienced in walking, but it bled freely when bruised or hurt in any way.

The growth consists of a flattened tuber, an inch and a half in diameter, and about an inch in thickness. Its margins and surface are fissured and warty-looking; and, as well as the entire substance of the tumour, exhibit an intensely black colour, interspersed with a few yellowish streaks.

Examined microscopically, the structure is characteristically epitheliomatous. Epithelial proliferation with “nests” and cylinders, &c., are particularly distinct in the superficial portions of the growth, the deeper being more compact, more intensely pigmented, and consisting chiefly of highly nucleated fibrous tissue, into which epithelial protrusions descend at irregular intervals.

233. Several ribs from a case of diffuse melanosis,—an East Indian male, aged 44,—showing nodulated, dark, sooty deposits scattered diffusely throughout the osseous tissue. They vary in size from a pea to a hen’s egg, and, on microscopic examination, their

structure is that of *enkephaloid cancer*, modified only by the dense pigmentary infiltration of both cells and stroma.

On the right side of the thorax, the 1st, 2nd, 3rd, 4th, 8th, 9th, and 10th ribs were all softened and infiltrated by these melanotic deposits,—the majority near their sternal ends. On the left side, with the exception of the 1st and 3rd, all the other ribs were similarly affected. On the right side 49, on the left 44, such pigmented growths were enumerated. Besides which there were melanotic cancerous deposits in the lungs, liver, kidneys, bones of the upper extremity, and in other situations of the body.

(See further, "Medical Post-mortem Records," vol. I, 1873, p. 16.)

- 234.** "A number of fibrous tumours removed at the *post-mortem* examination of a female who died in the Medical College Hospital. Some of these are situated in the substance of the uterus, but most of them are placed between the organ and the investing peritoneum. They are composed of fibrous tissue, nuclei and cells, and a few unstriped muscular fibrils." (Ewart.)

Presented by Professor D. Stewart.

- 235.** A large polypoid tumour removed from the uterus of a European woman. It had developed from the upper wall of the cervix, half an inch above the os. The pedicle was half an inch long, and about the thickness of one's thumb. It was divided by the wire-écraseur. The tumour filled the vagina. It is the size of a pomegranate; nodulated in outline; firm and fibrous-looking on section. Its structure, microscopically, is that of a typical myoma.

Presented by Professor T. E. Charles.

- 236.** Polypus uteri. A firm fibrous-looking tumour, the size of a duck's egg; slightly lobulated; and possessing a short pedicle, the remains or root of which—as large as a four-anna piece—can be seen at the base. No distinct capsule can be traced, but the outer layers of the growth appear to be more condensed than the central portions. On section a dense-white surface, intersected by opaque shining fibrous filaments (which have a concentric arrangement), is observed.

Under the microscope, the structure is found to consist of smooth muscular tissue,—the nuclei of which become very distinct on the addition of acetic acid,—bound or held together by firm white, fibrous or connective tissue. The tumour is a *myo-fibroma*.

Presented by Professor T. E. Charles.

- 237.** A "fibroid tumour" (myoma) removed from the fundus of an inverted uterus.

It is about the size of two fists; slightly lobulated; extremely dense and firm—cutting like cartilage; and has a pinkish-white, fibrous-looking appearance on section. The fibrous bands have a concentric arrangement, and enclose a large number of dilated arteries and veins,—the latter have wide open mouths, and many are blocked by soft red coagula.

Under the microscope, the growth consists principally of smooth (organic) muscular tissue, much of it in concentric fasciculi arranged around capillary vessels. A considerable quantity of

fibro-elastic tissue also exists, but the muscular elements clearly predominate, and the tumour therefore is a true *myoma*.

Presented by Professor T. E. Charles.

- 238.** Calcified myomata. "Two fibrous tumours springing by narrow pedicles, from the external surface of the fundus of the uterus. One, on the left side, is oval, small (2 inches by $1\frac{3}{4}$ inch), and consists of fibrous tissue concentrically disposed. The other, on the right side, is oval, larger, measuring 3 inches by $2\frac{1}{2}$ inches, and of stony hardness from almost complete calcareous degeneration. So abundant is this earthy deposit that the section now presented was made with difficulty with the saw. Near the roots of the tumours there existed, in addition to fibrous, a considerable admixture of unstriped muscular tissue. At this point their peduncles are manifestly continuous with the external substance of the uterus. Both growths are scantily supplied with blood-vessels. The uterus is atrophied, its cavity almost entirely obliterated, and the Fallopian tubes and ovaries mere streaks of fibrous tissue." (Ewart.)

Presented by Mr. Khettur Mohun Dutt.

- 239.** Myoma of the uterus. The patient was "a native female who died from metrorrhagia." The cavity of the uterus is almost obliterated by a large, mainly interstitial, growth;—a portion of the posterior lip and cervix being alone recognisable. There is no distinct boundary line or capsule between the tumour and walls of the uterus. The cut surface of the former has a coarsely-fibrillated appearance, is very dense, hard, and firm.

Microscopically, it is seen to be composed of smooth muscular tissue, arranged in longitudinal and concentric fasciculi, bound together by a considerable quantity of delicate fibrous tissue. In parts; fatty degeneration and pigmentary deposit, with molecular disintegration of the fibro-cells, are observed. The growth is a true myoma.

Presented by Assistant Surgeon Gopal Chunder Roy, Howrah Hospital.

- 240.** An enormous fibroid (myomatous) tumour involving the upper two-thirds of the anterior and lateral surfaces of the uterus of a European female, aged about 40. It is inseparably connected with the uterine walls; has no distinct capsule, but is invested by the peritoneum covering the rest of the organ. The os uteri is sufficiently open to admit the point of a probe; the cervix and body are much elongated. The lining membrane was slightly hyperæmic, otherwise healthy. The posterior uterine wall is thinned; and, projecting backwards from it, is a small similar fibroid growth, the size of a walnut. The ovaries are of normal size.

The structure of this enormous tumour (the weight together with the uterine, &c., being 5lbs. $3\frac{3}{4}$ ozs.) is that of the majority of the so-called "uterine fibroids," viz., consists principally of excessively developed smooth muscular tissue, forming huge wavy fasciculi held together by nucleated connective tissue. The blood-vessels are large and numerous (*myoma*).

The patient died from pyæmia associated with a large carbuncle on the back of the neck. (*See further, "Surgical, Post-mortem Records,"* vol. I, 1875, pp. 157-58.)

241. The uterus of a native woman, aged about 60, preserved to illustrate the mode of development, and the appearance at a very early stage, of the so-called "uterine fibroid," *i.e.*, myoma. The little tumour (about the size of a hazelnut) is seen developing interstitially in the anterior wall, and has not yet encroached upon the cavity of the organ,—is still purely parietal.

242. Section of a fibro-myoma developing in the fundus uteri. "It is globular; covered internally by thickened mucous membrane, and externally by an attenuated lamina of uterine tissue. It has encroached considerably upon the cavity of the organ. What remains of the same is exposed between two red glass rods." * * * * * "There are two smaller tumours of the same kind springing from the posterior part of the fundus." (Ewart.) The principal growth exhibits a mixed fibrous and muscular structure, and is thickly infiltrated with calcareous material.

Presented by Mr. Khetter Mohun Dutt.

243. "A polypoid tumour, weighing 3lb 14½ozs. Its greatest length is 9 inches; greatest width 5 inches; circumference in the long diameter 22½ inches, in the short diameter 15 inches. Is of six years' growth, and was removed from the anterior lip of the uterus of a native woman aged 30, the mother of two children." The polypus projected external to the vulva for about two inches, and its surface here has acquired a thickened, leathery, and almost integumentary, appearance. The rest of the tumour filled the vagina. On section it presents a distinctly fibrous appearance; is firm and resistant to the feel; of a dull whitish colour generally, but in parts blotched or discoloured by blood, and exhibiting a reddish or purplish tinge. The pedicle is very short, and where separated by the chain-écraseur (which was used for this operation) leaves a scar not larger than an eight-anna (shilling) piece. The growth is a *myoma*.

On microscopic examination, the fibro-muscular bundles (with large, bright, and distinct nuclei) are seen arranged concentrically, or intersect each other irregularly in all directions. They are held together by a varying thickness of delicate connective tissue. The vascular supply does not appear to be very abundant.

Presented by Professor T. E. Charles.

244. The uterus of an East Indian female, aged 60, who died from cholera, showing several interstitial myomata.

The organ is very curiously misshapen from the presence of these growths, and its surface is markedly tuberos. One growth—originally apparently interstitial, now completely fills the cavity of the fundus, and, on section, presents an advanced calcified condition. The os internum is obliterated; the canal of the cervix occupied by gelatinous mucoid secretion. A second tumour, the size of a walnut, projects upwards and to the right

from the fundus; and two others, of somewhat smaller size, stand out from the posterior wall. These smaller growths are very firm and fibrous, but show no calcification.

On microscopical examination, the structure of all the tumours is typically myomatous. In the smaller ones, nucleated fibro-cells (muscular) are very abundant; in the larger, less numerous, and replaced by well-formed fibrous (connective) tissue fasciculi, which have a more or less concentric arrangement.

245. A preparation showing (a) a calcified myoma the size of an orange, springing from the external aspect of the left horn of the fundus uteri. Its external surface is invested by peritoneum continuous with that covering the uterus. Its structure is hard and fibrous in character, but shows also extensive calcareous deposit. (b) Within the uterine cavity, attached to the inner surface of the fundus a small polypoid myoma, the size of a hazelnut. (c) Projecting from the anterior surface of the organ, a small, calcified, irregularly rounded myoma, the size of a nutmeg, invested by the uterine peritoneum.

The uterus itself is elongated and narrow. "From a subject in the dissecting-room."

246. A short and narrow-pedicle myoma growing from the anterior surface of the uterus (into the pelvic cavity). The tumour is the size of a walnut, smooth and rounded. It is invested by peritoneum continuous with that covering the rest of the uterus. On section it is found that a thickened fold of peritoneum is now the only connection between the growth and the uterus, so that it can be completely shelled out of the capsule thus formed for it by the serous membrane. The cut surface is decidedly fibrous; the consistency very firm and hard; and, microscopically, the structure is that of true myoma. The interlacing bundles of fibro-muscular tissue are well developed, and their nuclei distinct and characteristic. Taken from a native woman, aged about 55, who died in hospital of pneumonia.

247. A polypoid myoma of the uterus removed by operation (wire-écraseur). The tumour is ovoid in shape; slightly lobulated at one end, ulcerated at the other. On section firm, fibroid-looking; of a pinkish-white colour (in the fresh state). The structure is characteristically myomatous. The disposition of the bundles of smooth muscular tissue is, for the most part, concentric; it is freely supplied with nuclei,—becoming very prominent on the addition of acetic acid. The connective tissue is scanty, but the blood-vessels numerous and large, and in parts developed into an almost cavernous system.

Presented by Professor T. E. Charles.

248. Uterus laid open to exhibit a small short-pedicle growth (myoma) developing from the posterior wall of the fundus, and filling this portion of the uterine cavity. Preserved to illustrate an early stage in the development of many of these growths. From a native female, aged 50 who died from morbus Brightii.
249. "Sections of two fibrous" myomatous) "tumours in the walls of the uterus. They have undergone almost complete

calcareous degeneration. The *uppermost* one is about the size of a pigeon's egg, the *inferior* one is about as large as an orange. There is a small growth at the side as large as a hazelnut and as hard as a stone. Each of these tumours is surrounded by a lamina of uterine structure. The remains of the cavity of the organ is held apart by a glass rod." (Ewart.)
No history.

250. A preparation showing a pedunculated or polypoid myoma of the intestine. The growth is the size of a small orange, and is seen to have developed from the outer aspect of the small intestine,—a portion of which has been preserved. It is rounded in outline; smooth; has a distinct capsule formed by an expansion of the peritoneal coat of the bowel. On section it is firm and fibroid-looking;—the cut surface shows a concentric arrangement of structure. The matrix is the muscular coat of the bowel, with which the growth is directly continuous at its attached portion, and is of homologous structure, *i.e.*, consists of smooth muscular tissue in bands or fasciculi, which display an annular disposition throughout the tumour, are held together by a little delicate connective tissue, and permeated by small blood-vessels. The peculiar nuclei of organic muscular tissue are rendered very distinct in sections treated with dilute acetic acid. In parts, a little fatty and mucoid degeneration of the binding connective tissue is observed.

Presented by the Civil Surgeon of Rampore Beaulah.

251. A preparation illustrating bulbous enlargements of the nerve-ends (neuromata) in an old amputation stump of the forearm. The extremities of the median, radial, and ulnar nerves in the stump are rounded and expanded so as to form tumour-like swellings, each about the size of a small hazelnut. These are composed of nerve fibrillæ bound together by firm white fibrous tissue, and encapsuled by the common neurilemma of the nerve-trunk.

The bones of the forearm are rounded off, smooth, and covered by a thick fibrous investment. The tendons of the flexor and extensor muscles are atrophied, and all these structures are matted together by very dense, firm, fibro-adipose tissue.

252. A tumour, the size of a chestnut, removed from the inner and anterior aspect of the left orbit of a native child, aged about three years. It was situated at the root of the nose, and overlapped by the inner halves of both eyelids. The growth was congenital; when first noticed, about the size of a pea; has slowly acquired its present dimensions. It was intimately connected with the superjacent skin; has no distinct capsule. At one end of the basal portion a thickened nervous cord is seen,—probably the left supra-orbital nerve,—which can be traced into the tumour-tissue, and is lost there, apparently breaking up into its ultimate fibrillæ. On section, the little tumour has a glistening-white, fibrous appearance, is very firm and tough; cutting with difficulty.

Microscopic sections exhibit well-formed connective tissue, the fasciculi of which are arranged more or less concentrically, enclosing angular and stellate cells and nuclei. Intermingled with this tissue are large bundles of nerve-fibre, possessing both the white substance (of Schwann) and axis cylinder. Several considerable-sized arteries are found distributed throughout the growth, and, in parts, numerous capillaries filled with dark pigment-matter.

The structure of the tumour is therefore complex, but the tissues which form its bulk are nervous and connective, and these are so intimately commingled that it is difficult, if not impossible, to state which preponderates. It may be regarded as a *congenital fibro-neuroma*.

Presented by Professor W. J. Palmer.

253. "Section of a vascular tumour as large as a walnut removed from the upper and outer part of the left arm of a native of Jessore. It had been growing three years. It had bled a great deal at various times, and during the four days prior to its extirpation, it bled almost constantly, owing to the unskilful application of a horse-hair ligature, which partially strangulated the growth and opened some of the vessels. Only three ligatures were used at the removal of the growth, which consists of a rich network of vessels supported by fine delicate fibro-areolar tissue; and at those points where blood had become extravasated, there exist a great number of blood corpuscles, many fat globules, and a few exudation corpuscles." (Ewart.)

Presented by Professor J. Fayer.

254. "A section of a pendulous fibro-vascular tumour removed from the region of the left anterior superior spinous process of the ilium of an old woman, aged sixty, residing at Colootollah. It consists of an extremely fine network of areolar tissue and minute vessels, the openings of which, and of the larger trunks, are plainly seen." (Ewart.)

The tumour is as large as one's fist. The skin over it has a remarkably papillated appearance, and is seen to be thus disposed in vertical sections made for the microscope. The blood-vessels entering so largely into the composition of the growth seem to be developments from those normally supplying the cutis vera. They are throughout dilated, in parts almost cavernous in character,—in fact, in one portion, a cyst-like cavity is found, filled with granular pigmented *débris* of soft, cheesy consistency,—evidently altered blood. This cyst is lined by a layer of flattened epithelium, and appears to be therefore an unusually large dilatation of one or more vessels, which has become gradually separated from the rest, and thus constitutes a closed cavity (sanguineous cyst). A considerable quantity of abundantly nucleated connective tissue exists between the plexuses of vessels, supporting and at the same time separating them from each other. The tumour is undoubtedly a *simple angioma*. (J. F. P. McC.)

255. A small vascular tumour (angioma) removed from the thigh of an East Indian boy, about 13 years of age. The growth was congenital, but of late had increased rapidly. It was intimately connected with the superjacent skin, which has been removed with it; below, it is imbedded in the ordinary subcutaneous adipose tissue. There is no capsule, and no well-marked line of

demarcation. The structure is purely nœvoid—a simple group of dilated capillary vessels, in which venous channels appear to predominate. These are seen (under the microscope) to be held together by a little delicate, nucleated connective tissue, and a few elastic filaments.

Presented by Professor K. McLeod.

- 256.** Cavernous angioma. A small rounded tumour, “removed from behind the left ear of a native.” It was highly vascular, and thought to be malignant. The superjacent skin is closely connected to the growth, and has been excised with it. On section, the structure is seen to be honeycombed, and consists of a series of intercommunicating vascular spaces bound together by fibrous tissue. Under the microscope, the vascular alveoli are seen to be formed by fibro-elastic tissue, are lined by flattened pavement epithelium, and contain a soft granular *débris*, in which shrivelled and contorted blood-corpuscles are readily distinguished.

Presented by Professor J. Fayrer.

- 257.** Cavernous angioma of the left orbit. From a native male patient, aged 65.

The growth was said to be of ten years' duration. It is about the size of a small orange, the surface slightly lobulated, the consistency semi-elastic and soft.

The tumour on section exhibits throughout a highly vascular cavernous structure, a condition which is verified on microscopic examination. The septa or walls of the vascular spaces are formed by delicate fibro-elastic tissue; the latter are lined by a layer of hyaline flattened epithelium, and filled with blood-corpuscles in various stages of disintegration.

Presented by Professor S. B. Partridge.

- 258.** “Aneurismal tumour by anastomosis occupying the situation of the middle and ring fingers of the right hand. The arteries and superficial veins are enormously enlarged. They are injected with vermilion.” (Ewart.)

The ulnar artery chiefly contributes to the formation of the *tumour*, but, on the dorsal aspect of the wrist and hand, there is a kind of cirroid dilatation of the branches of anastomosis between this vessel and a very largely developed posterior radial artery, which seems to have come off from the brachial directly, or from the radial proper near the bend of the elbow. (J. F. P. McC.)

Presented by Professor J. Jackson.

- 259.** Cirroid dilatation of the coronary vessels of the stomach. In the fresh state, the mucous membrane was found congested, and of dark purplish colour. The inner surface is raised and corrugated; this, at the œsophageal end, being due to a very remarkably varicose, dilated, and thrombosed condition of the coronary vessels in the submucous tissue. There is no lesion of the mucous membrane. From a European aged 49 (an indigo-planter), who died from aneurism of the thoracic aorta. (*See further, “Medical Post-mortem Records,”* vol. II, 1877, pp. 359-60.)

260. "Portion of the walls of a subcutaneous cyst with sebaceous contents. The internal membrane is much pitted and corrugated." (Ewart.)
261. Subcutaneous sebaceous cyst of globular shape, and as large as an orange. It contains pultaceous fatty material, of the consistency and colour of brown honey.
262. A similar cyst-wall, the contents having been evacuated. The skin is adherent to the surface. The interior is shreddy and laminated.
263. "Two globular subcutaneous cysts, each measuring about an inch and a half across. To the *uppermost* one a portion of integument is attached, the cutis vera of which is lying in accurate apposition to the growth. The cystic wall is composed of two distinct layers, viz., an *external translucent lamina* of white fibrous tissue, and an *internal, dull, leaden-coloured lamina*. The *lower* cyst is formed by a single layer of dense, strong, fibrous tissue, enclosing a material of an opaque colour—a mixture of fat and cholesterine and degenerated scales." (Ewart.)

They are both very characteristic sebaceous cysts.

264. "A well-defined subcutaneous" (sebaceous) "cyst filled with fat and cholesterine, which are now solidified in the preparation." (Ewart.)
265. A cystic tumour, the size of a pigeon's egg, "removed from the neck." It consists of a series of small cysts separated by broad bands of fibro-elastic tissue, and containing yellowish, cheesy-like soft material, which, under the microscope, exhibits much fat in granular and molecular form, and numerous degenerated epithelial scales (multilocular sebaceous cyst).
266. A large sebaceous cyst with semi-solid, yellowish-white, curdy-looking contents. It was "removed from the neck, between the origins of the sterno-cleido muscle of a native, aged 23 years. The cyst is thin and well-defined, having a nucleated epithelial lining, a basement membrane, and a strong protective layer of connective tissue giving passage to a rich supply of blood-vessels. Contents lardaceous, consisting of granules, fat, and cholesterine, almost all soluble in ether under the field of the microscope. The man made a slow recovery. A small opening occurred in the trachea from subsequent ulceration, but this eventually closed." (Ewart.)

Presented by Professor J. Fayrer.

267. A subcutaneous sebaceous cyst, the size of a large orange, removed from the gluteal region of a native male patient. Besides the ordinary putty-like material "large quantities of cholesterine were found in the cyst-contents."

Presented by Assistant Surgeon Ram Chunder Sen, Dacca.

268. An entire sebaceous cyst, the size of a small orange, removed from the scalp of a native. Its contents consisted of the usual pulpy whitish material, composed principally of fat and epithelial cells, the latter found in large compound "granule masses."

Presented by Dr. J. Ewart.

- 269.** A portion of a very thin-walled sebaceous cyst, which was as large as a Tangerine orange, and was removed, *post mortem*, from just beneath the skin of the left mammary region, two and a half inches above the nipple.

From a native male patient, aged 40. The cyst was filled with brownish, opaque, putty-like material.

- 270.** A large sebaceous cyst removed from the right shoulder of a Mahomedan, aged 45. It was intimately adherent to the superjacent skin, which had ulcerated at one spot (as large as a four-anna piece), "five days before the operation was performed." The growth is said to have been of three years' duration.

The cyst-walls are thin, but composed of well-formed nucleated connective or fibrous tissue. The lining membrane is shiny, pearly-white, brilliant, consists of several layers of flattened epithelial cells undergoing fatty metamorphosis. The contents are pulpy and flaky,—like spermaceti, and, under the microscope, exhibit an abundance of fatty and degenerate epithelial scales, free fat—globular and granular, and much cholesterine, in the form of flattened superimposed plates.

Presented by Professor K. McLeod.

- 271.** A small cystic growth (the size of a sparrow's egg) with very thin, transparent walls, "removed from the mouth;"—probably a *ranula*.

- 272.** A subcutaneous mucoid cyst removed from "the shoulder of a native female. It was found filled with dark, coffee-coloured fluid, of thin, glue-like consistence."

The cyst is multiloculated; the walls are composed of delicate connective tissue lined by epithelium, and contain now a soft mucoid material, in which are suspended numerous cell-elements,—epithelial, and of the character of mucus-corpuscles. Individual loculi vary in size from that of a barley-grain to that of a hazelnut. A portion of the integument is adherent to one side of the growth.

Presented by Professor J. Fayer.

- 273.** A tumour of the thyroid gland, removed by operation from a Mahomedan, aged about 29. It is said to have been of eight years' duration, and to have been accompanied by a good deal of throbbing pain.

"The tumour occupied a space extending from the prominence of the larynx to the notch of the sternum, and had on either side the sterno-mastoid muscles widely separated. Was freely movable in all directions, and not adherent to the skin."

The growth consists of an oval-shaped enlargement of the entire gland, constituting a mass rather larger than one's fist. It is surrounded by loose connective tissue containing several large blood-vessels, which all required to be ligatured. Beneath this is the true fibrous capsule of the thyroid, sending innumerable dissepiments into the interior of the gland, so as to subdivide it into various sized lobules, and these, in turn, are made up of a multitude of small cysts;—some as large as a pea, the majority smaller, and and a great many quite microscopic. These cysts are occupied by

a gelatinous, rosy, or pale-yellow material, and exhibit, under the microscope, a delicate cyst-wall of fine connective tissue, lined by flattened nucleated epithelium, and filled by variously-coloured *mucoid* or colloid secretion. The larger cysts seem to be formed by the coalescence of two or more of the smaller ones. Upon the dissepiments large-sized but thin-walled vessels ramify, but do not penetrate the cyst-contents. Towards the centre of the growth the fibrous septa are much thickened, and rigid from calcification.

There is thus no abnormal growth, but an exaggerated condition of the normal structure of the thyroid, and with it a more complex and abundant vascular development. Many of the septa are also infiltrated with mucoid material, and no doubt to the softening thus produced must be attributed the development of the smaller into larger cysts, and the general very succulent and gelatinous consistency of the entire mass.

Presented by Professor K. McLeod.

274. "Encysted tumour, with serous contents, pressing upon the carotid sheath near the bifurcation of the common carotid artery. The growth simulated aneurism. It occurred in a very old man, who died shortly after his admission into the Medical College Hospital." (Ewart)

Presented by Professor J. Fayrer.

275. "A large bursa from the front of the patella. It contained thickened synovial fluid. Its walls are cartilaginous in consistency and fully a quarter of an inch in diameter." (Ewart.)

Presented by Professor S. B. Partridge.

276. Hydrocele of the left tunica vaginalis. This membrane has been artificially dried after evacuation of its contents (sixteen ounces of serous fluid). The pyriform outline of the cyst and the structure of its wall are well demonstrated.

Removed, *post mortem*, from a native male, aged 35, who died of pulmonary phthisis.

277. A specimen of congenital cystic degeneration of the kidneys. "From a native female child, aged three months, apparently in perfect health, who died from asphyxia (over-lying), the result of accidental smothering in the bed-clothes during sleep."

Both organs are enlarged to about three times their normal size, and are remarkably lobulated, the lobules being formed by multilocular or compound cysts. These vary in size from that of a small pea to that of a pigeon's egg, and are made up of a series of secondary, quite minute, cysts. All contain thin, limpid, *serous* fluid. The proper secreting structure is almost entirely replaced by this very remarkable cystic transformation.

Presented by J. R. Wallace, Esq., L.R.C.S., Edin.

278. A bursal cyst found, *post mortem*, in the sole of the left foot, situated immediately beneath the skin,—between it and the short flexor tendons. The cyst-wall is complete, and has a shiny, glistening lining membrane. It contained a little yellowish, slightly turbid serum.

From a native male, aged 22, who died of dysentery.

- 279.** A sanguineous cyst of the right testicle, situated at its upper part, and apparently due to rupture of the vessels composing the globus major of the epididymis. The cyst-wall is very hard and firm from calcareous infiltration. Removed, *post mortem*, from a native male, aged 60.
- 280.** A cystic hæmatoma, partially calcified. From the left supra-scapular region (beneath the trapezius muscle) of a Punjabi (male), aged 30. The exact duration of the growth could not be ascertained. It was punctured prior to removal, and about an ounce of fluid blood evacuated. The growth is the size of a small orange, cystic in character, and filled with blood—partly coagulated. Some muscular shreds of the trapezius are closely adherent to the cyst-wall. The latter is composed of well-formed, tough, fibro-clastic tissue, two to three lines in thickness. On incision, the remains of a few imperfect septa or dissepiments are observed. The contents, examined microscopically, consist of altered blood only; no abnormal cell growth. Several calcareous concretions (one rather larger than a pea) are found projecting into the cyst-cavity from its wall at one part; and the fibro-clastic tissue of the latter is itself seen to be undergoing calcareous transformation. No blood-vessel of any size can be traced into or near the cyst. The blood extravasation has, probably, been accidental, and the cyst-wall now formed around it has served to isolate and separate it from the surrounding muscular and other tissues.
- 281.** Hypertrophy with cystic degeneration of the thyroid gland. The cysts vary in size from that of a pin's head to that of a pea, and are filled with thick, yellow, colloid material.
From a native female, aged 20, who died in hospital from (idiopathic) tetanus.
- 282.** Colloid cysts of the left kidney. From an East Indian (male) aged 30, who died of acute pulmonary tuberculosis.
The organ is much enlarged, weighing $9\frac{1}{2}$ ozs. From its surface project numerous large cysts filled with brownish-yellow, sticky material—like glue (colloid). They extend deeply into the secreting structure, which is coarse-looking, but otherwise apparently healthy.
- 283.** Left kidney infiltrated with colloid cysts. These are solitary or in groups, and vary in size from that of a pea to that of a small hazelnut. The material they contain is brownish, gummy, semi-transparent. The right kidney contained none of these cysts.
From a native male, aged 30, who died in hospital of pneumonia.
- 284.** "A large multilocular ovarian tumour. It consists of several small cysts, varying from the size of a hazelnut to that of an orange. One of the parent cysts is as large as a man's head. The walls are very thick, dense, and strong." (Ewart.)
- 285.** A very large compound or multilocular ovarian cyst. The largest or mother-cyst is the size of a water-melon. It contains several smaller ones, with thick dissepiments between them. No history.
- 286.** A large ovarian tumour (cyst). The walls are very dense and thick; and while one portion of the same exhibits a comparatively

smooth inner surface, the rest is covered with nests of proliferating, semi-solid, cystic growths.

287. "A large cystic tumour containing gelatinous matter, removed from the front of the ear of a native. It weighed 10lbs 7 ozs., and was attached by a long pedicle to the skin just in front of the ear, reaching to his waist. It had no deep-seated connections. The tumour had been growing for the last five years, and the man thought it was caused by slight hurt from a bamboo."

The cystic tumour is the size of a water-melon. Its external surface is covered by the skin, which presents a normal but somewhat piebald appearance; the latter being due to long maceration in spirit, and consequent separation, in patches, of the pigmented cuticular layer. Beneath the skin, and inseparably connected with it, is the proper cyst-wall, from half an inch to an inch in thickness, and composed of fibro-elastic tissue. (It consists, under the microscope, of dense white fibrous tissue, abundantly nucleated, and containing a large number of capillary vessels.) From the sides of this cyst-wall septa seem to have developed, dividing its interior into numerous compartments of varying size (multilocular). The remains of these, in a tattered, disorganised, and broken down condition, can still be identified. No fluid contents are now found. The growth seems to have been fibro-cystic in character, and, in the fresh state, was probably much infiltrated with mucoid material.

Presented by Dr. Mathew, Civil Surgeon Darjeeling.

288. Preparation showing a small multilocular cyst involving almost the whole of the left ovary. Its contents consist of soft, curdy, semi-solid material, which, under the microscope, exhibits no definite cell-elements, but is composed of fatty granules and molecules, with free nuclei, and withered and degenerate (? epithelial) cells.

Presented by Professor C. O. Woodford.

289. A multiloculated ovarian cyst removed by operation from a native female, aged 34.

"She was a married woman, the mother of two children,—the last born eight years ago. The duration of the growth was two and a half years. The operation consisted of one incision five inches long, in the median line, from the umbilicus downwards. Adhesions were found to the abdominal wall, intestines, broad ligament, and uterus. These were separated; the cyst drawn out and tapped; the pedicle divided, ligatured, and returned into the abdominal cavity. The patient survived the operation only two hours. Her general state of health was unsatisfactory."

The parent-cyst has strong fibroid walls. Attached to its interior are more than a dozen *sessile* secondary cysts. These, on puncture, exude a thick, opalescent, mucilaginous fluid, and their walls are found studded with smaller tertiary cysts. Some of the latter have also thick mucilaginous contents, others are more solid, and, when incised, exhibit a series of closely packed daughter-cysts, folded upon each other like the petals of a bud. The fluid, under the microscope, is highly granular, and holds

in suspension a multitude of rounded epithelial cells, all thickly infiltrated with molecules of highly refractive mucoid material.

Presented by Professor T. E. Charles.

290. A cystic ovarian tumour removed by operation from a native woman, aged 35. It had been growing for about eighteen months. "The two larger cysts were tapped during the operation." The patient made a good recovery. The growth is seen to be multilocular in character, the loculi in some instances being separate and distinct, but the majority intercommunicate. The two largest are exposed to show their compound character, and the remains of the fibrous dissepiments upon their walls, indicative of the coalescence of several originally distinct cysts.

The contents of the smaller cysts, which remain entire, consist of a mucilaginous, blood-tinged fluid, of the consistency of white-of-egg. The walls are thick, leathery, and fibrous; their inner surfaces smooth, shiny from an epithelial investment, and exhibit considerable vascularity.

Presented by Professor H. Cayley.

291. An enormous proliferous cyst of the ovary having thick plicated walls, about a quarter of an inch in diameter. From its interior spring a series of secondary solid or semi-solid growths, containing hair and much sebaceous material. No history.

292. "A very excellent specimen, exhibiting the early appearance and connections of dermoid ovarian growths. Two cysts, as large as hen's eggs, spring from the right ovary. These contain hair and a soft cheesy substance consisting of oil-globules and epithelial scales. The dense fibrous character of the parietes of the growth now distended with this material is well demonstrated. The floor of that which has been almost emptied of its contents is formed by this hairy and fatty matter. The section shows that the remainder of the ovary is honeycombed by primitive cysts varying from the size of a pin's head to that of a bean. From the upper surface of the left ovary several small cysts are seen springing, resembling nothing so much as a cluster of Cabool grapes." (Ewart.)

Presented by Mr. Vanderstratten.

293. A very large dentigerous or dermoid cyst of the ovary. It is multiloculated, and more or less solid in character. The loculi are occupied by thick, brownish, putty-like, sebaceous material, and several contain, in addition, hair and teeth.

"Before the operation the tumour measured 19 inches in a vertical, and 20 in a transverse direction, and the woman's abdomen measured 43 inches in circumference. After removal, when emptied of most of its thick fluid contents, the cyst weighed 19lbs 4ozs." * * * * *

"The growth was first noticed three years previously, but it remained stationary till within the last ten months, during which period it assumed the present dimensions. The woman was twenty-seven years of age. She sank, sixteen hours after the operation."

Presented by Professor T. E. Charles.

294. A preparation showing a large dentigerous cyst situated between the anterior abdominal wall and the fundus uteri. A portion

of the abdominal wall is preserved together with the cyst, the uterus, and ovaries, &c. About an inch below and to the right of the umbilicus is an irregularly rounded opening with sloughy edges, about two inches in diameter. It communicates with the cyst, and through it, during life, sebaceous material, hairs, teeth, &c., were discharged. The cyst itself is as large as the foetal head. It is firmly adherent to the parietal peritoneum all round the opening in the abdominal wall; posteriorly and below, it is attached by a broad flat pedicle (an inch in length and three-fourths of an inch in thickness) to the upper border of the fundus uteri, a little to the right of the median line, and at the angle of junction of the right Fallopian tube with the uterus. Between these attachments it is free. Its walls are thick and fibrous; its interior traversed by shreddy dissepiments of fibro-elastic tissue, which seem to start from a common centre on the posterior wall, and diverge towards the circumference. The inner surface is studded with soft nodules and partially organised solid growths, fibroid in character. These are overlaid by soft, brownish, sebaceous or grumous material, imbedded in which are fine long hairs. The two layers of peritoneum forming the right broad ligament, after investing the Fallopian tube, pass on to be reflected over the outer surface of the cyst. The uterus is small and unimpregnated; its cavity healthy. The ovaries are small and atrophied.

The patient, a Bengali female, a widow, aged 20, stated that six months prior to her admission into hospital she first noticed a swelling, the size of a walnut, in the hypogastric region, a little to the right of the median line. It slowly and painlessly increased to the size of an orange, and was movable. Within the last two months only has it grown more rapidly, and become painful. Twelve days ago a small slough formed upon the abdominal wall immediately over the tumour, the skin gave way, and a thin purulent discharge has since continued to exude.

She was not pregnant at the time of the first appearance of the growth, and since then, with the exception of the last two months, has menstruated regularly. Latterly there has been a good deal of febrile disturbance.

On admission, the tumour presented a somewhat pyramidal shape, filled the hypogastric region, the umbilical, and portions of the right and left inguinal spaces. The sloughy opening in the abdominal parietes was enlarged, and poultices applied, while the cavity of the cyst was daily washed out with carbolic acid lotion. Much grumous and sebaceous matter, besides hairs, a few teeth, and small pieces of cartilage and bone, were thus evacuated; but the prolonged irritation and discharge told upon her health, and she died exhausted, after about a month's treatment in hospital.

295. A large ovarian cystic tumour removed by operation from a native female, aged 37.

The duration of the growth was three and a half years; the patient a married woman; the number of pregnancies two,—the last child born seventeen years ago. Menstruation regular until appearance of the tumour, then more frequent—every fortnight. General health at the time of operation fairly good. The latter was performed by one vertical incision, extending from just above the umbilicus to within two inches of the pubes. Cysts of the tumour then tapped one after the other; tumour separated from surrounding adhesions and brought out of the abdominal cavity. Pedicle secured with two catgut ligatures, returned within the abdomen, and eight silver-wire

sutures closed the parietal wound. The patient died, on the eighth day, from pelvic peritonitis, and probably hæmorrhage from the divided pedicle. No *post-mortem* examination.

This is a compound proliferous cyst. The principal or mother-cyst is the size of a melon, and has a thick strong wall of white fibrous tissue. Its inner surface is smooth and glistening,—is invested by a thin layer of epithelium. Within the mother-cyst are secondary and tertiary cyst-formations, of all sizes, and either sessile or pedunculated. The majority have mucoid fluid contents. There are also firmer, nodulated, semi-solid growths, which, on section and microscopic examination, present an acinous-like structure, consisting of a basement membrane of connective tissue lined on both sides by cylindric epithelium. They represent, apparently, the earlier stages in the development of the truly cystic formations. Buds or villous processes project from the inner surface of the basement membrane, form dendritic vegetations, which meet at points to constitute closed acini or embryonic (young) cysts. These latter are occupied by mucoid material, in which lie suspended shred epithelial elements—showing fatty and mucoid degeneration, and free, glistening, yellowish, pigmentary particles,—probably altered blood.

Presented by Professor T. E. Charles.

296. “A congenital cystic tumour removed from the occipital region of a native child four months old. At birth the tumour was the size of a hen’s egg. It has gradually increased, and also become pedunculated, so that it hung down to the lower part of the neck at the time of the operation. Six days after the removal the child became tetanic, and died on the eighth day.” (Ewart.)

Presented by Professor J. Fayrer.

297. A sebaceous cyst, said to be congenital, removed from the thigh of a native female, aged 30. It is the size of a large orange, and contained thick, creamy, opaque-white, pultaceous fluid, which, examined microscopically, consisted principally of large polymorphous, mostly withered and degenerate, epithelial cells, cholesterine crystals—in the form of superimposed brilliant plates or scales, and much free granular and molecular fat.

Presented by Professor D. O’C. Raye.

298. “A melanotic tumour from the lip of a cow. It is eight inches long, seven broad, and four inches thick. Its section is of a jet black colour.” (Ewart.)

Microscopically examined, the structure of the growth consists of succulent, soft, fibro-elastic tissue, with nuclei and cells impregnated by very dark granular pigment. There is no specific arrangement of structure. (J. F. P. McC.)

Presented by Dr. G. Daly.

299. “A great number of melanotic growths attached to the pleura costalis of the horse. The convexities of the tumours are of deep black colour, whilst some of the sulci are white or opaque.

Many similar growths were found underneath the skin."
(Ewart.)

Under the microscope, an imperfectly developed stroma of connective tissue, forming alveolar spaces, is found, the latter enclosing rounded darkly pigmented cells and nuclei. The stroma is also a good deal pigmented. The structure, therefore, has a resemblance to melanotic carcinoma in man. (J. F. P. McC.)

Presented by G. Holmes, Esq., Veterinary Surgeon.

300. "Large bony cyst developed in the symphysis of the lower jaw of a bullock, and removed by making a flap of the lower lip, and sawing through each half of the bone near their junction. The under or buccal surface of the cyst is smooth; the upper or oral is rough and irregular, the laminae of the bone being widely separated. At this spot an irregular opening presents in front, from which the incisors projected, and of which some portions have been preserved. The canals for the inferior dental vessels, seen on the cut surfaces of the bone, are much enlarged."

"Mr. Dickson has removed two precisely similar tumours from the same position in other bullocks. One of these is now a useful animal, and none the worse for the operation except being unable to graze, and requiring therefore to have grass cut for its use." (Colles.)

Presented by W. P. Dickson, Esq., Civil Surgeon, Rohtuk.



CATALOGUE
OF THE
PATHOLOGICAL MUSEUM.
MEDICAL COLLEGE, CALCUTTA.

PART X.

MALFORMATIONS, MISPLACEMENTS, AND DISEASES OF THE OVUM (CONGENITAL MALFORMATIONS AND DEFORMITIES GENERALLY).

ENTOZOA FROM VARIOUS PARTS OF THE BODY.

CALCULI, CONCRETIONS, AND FOREIGN BODIES FROM THE URINARY AND DIGESTIVE ORGANS, AND FROM OTHER PARTS OF THE BODY.

SERIES XVIII, XIX, AND XX.

SERIES XVIII.

MALFORMATIONS, MISPLACEMENTS, AND DISEASES OF THE OVUM (CONGENITAL MALFORMATIONS AND DEFORMITIES GENERALLY).

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1. Preparation of a monster which consists of “two female children united together in the thorax and upper part of the abdomen by a broad connection, which extends from the sternum to the umbilicus. Below and above these two points all is apparently natural. The heads, necks, arms, lower abdomen, pelves, and inferior extremities of both children are perfect, and the external organs of generation complete. There is only one perfect umbilical cord, but below that is seen a small prolongation, about an inch in length, and three parts of an inch in diameter. This prolongation is hollow, at the further extremity forming a cavity about the size of a hazelnut, terminating in the nearer end in a mass of cellular structure. It appears externally like a rudimentary second cord, but its internal structure would almost lead to the supposition that it was rather a monstrous umbilical vesicle. The length of the whole monster is from 15 to 16 inches; circumference of the whole, 11 to 12 inches; circumference of the connecting medium, 9 to 10 inches; length of it, about 4; circumference of each head round the forehead and vertex, 11 inches; weight, five pounds. There is a considerable quantity of hair upon the heads, and even upon the body and extremities, and the finger and toe nails are perfect. In fact, though rather small, it was evidently born at the full period of utero-gestation.” * * * * *

“There is one thoracic and one abdominal cavity common to both children, these cavities being divided from each other by a single diaphragm. The walls of the thorax are composed of a double set of ribs, with two sternebrae, one on the anterior and the other on the posterior part of the commissure, so placed that each sternum is common to both children. There is consequently a spinal column to each. The abdominal muscles are likewise double. The abdominal and pelvic viscera of both children are perfect in all things, with the exception of the liver. This organ appears to consist of two perfect livers united together at their convex surfaces. There are two gall-bladders, one on each side of the centre, two hepatic arteries, and two venæ portarum, with distinct cystic and hepatic ducts for each side. Two umbilical veins pass down from the common navel, and separating from each other they enter the venæ portæ of each division. In their course, these vessels immediately before reaching their destination pass directly through the substance of the liver for about an inch, and

emerging from thence enter the transverse sulcus. Each of these vessels sends off a ductus venosus, which terminates in a separate vena cava. There are four umbilical arteries, two for each child. This arrangement of the liver of course reverses completely the disposition of the abdominal viscera of the right child. The spleen is placed in the right hypochondrium, the pyloric extremity of the stomach looks towards the left side, and the duodenum crosses the spine from left to right. All the other abdominal and pelvic viscera are perfectly distinct on both sides. The single diaphragm is perforated by a double set of the customary foramina.
* * * Indeed, the abdominal contents are so placed that their arrangement may perhaps most readily be understood by conceiving the viscera of one child reflected in a mirror to form the viscera of the other." (H. H. Goodeve).—Webb's *Pathologia Indica*, No. 325, p. 292.

2. The thoracic and abdominal viscera of the above monster. The following interesting description of the former is recorded by Dr. Goodeve:—

"In the centre of the whole, floating in a capacious pericardium, is a huge heart common to both children, yet in this, too, there is a partial attempt at the formation of a double organ. Externally there is a slight sulcus running down the centre, corresponding to an imperfect septum within. But in the interior of the organ all is confusion and malformation. The right ventricle on either side opens into a large auricular cavity common to both, and situated at the upper part of the organ. The opening between these cavities is furnished with a valve, also apparently common to both. From the right ventricle of the left side springs a pulmonary artery, but from the corresponding ventricle of the right division no similar vessel arises. The only opening into that cavity is through the auriculo-ventricular foramen. The superior and inferior venæ cavae of both sides empty themselves into the common right auricle. This latter cavity again communicates with a common left auricle by an enormous foramen, which may be supposed to represent the foramen ovale, but no trace of any valvular arrangement to cover this gap can be discovered; all is free, and the passage of blood through it in either direction must have been unimpeded. Into the left common auricle one pulmonary vein from each child terminates. This left auricle communicates with two separate left ventricles. Indeed, there is apparently one common opening between all the cavities of the heart. From each of the left ventricles arises a perfect aorta, one passing to the left in the natural course, the other curving to the right to reach the spine of the right child. The semilunar valves of each are perfect. They both give off coronary arteries, and from the arches of either side spring arteriæ innominatæ, carotids, and subclavians. The single pulmonary artery, viz., that of the left side, is distributed exclusively to the lungs of the left child, and a well-formed ductus arteriosus stretches between it and the aorta. The lungs of both children are perfect, and naturally formed. Those of each side are contained in a separate pleura. A thymus gland common to both children is placed in the upper part of the thoracic cavity. The absence of a direct pulmonary artery on the right side is supplied by a branch which arises from the arch of the aorta on its inferior side. In fact, this branch is apparently the ductus arteriosus, the commencement of the pulmonary artery being absent, or, perhaps, more properly speaking, the aorta and the root of the pulmonary artery have coalesced in the progress of development, forming but one vessel as far as the ductus arteriosus, the true pulmonary artery beginning from thence."

Presented by Professor H. H. Goodeve.

3. "Twins at the full term connected together in the umbilical region in the manner of the Siamese twins. In all other respects the children seem perfect." (Ewart.)

Presented by Dr. Bedford.

4. "Twins attached to each other in the umbilical region. One is a full-grown foetus; the other is diminutive in size, and the subject of malformation about the head, face, neck, and extremities." (Ewart.) The latter is attached to the abdomen of the former, and is only about one-fifth the size of the mature foetus. The upper extremities, in a rudimentary form, are alone developed. No history.
5. A monstrosity consisting of two female foetuses, apparently full-grown and well developed, united together along the thorax, but possessing (each) a separate abdominal cavity and upper and lower extremities, &c. One of the conjoined twins may be seen to have a hare-lip and cleft palate.

Presented by Honorary Surgeon J. Slane, Civil Medical Officer of Goalparah.

6. A double monster, having a common head to two bodies, "which are joined together along the thorax and abdomen by their anterior aspects." (Ewart.)
7. "A double monster with one face, one head, and two bodies. Thorax and abdomen are joined together." (Ewart.)

This preparation closely resembles the preceding, but an attempt at the division of the head is more marked posteriorly, where a deep vertical sulcus or fissure may be observed.

8. Twin foetal monstrosity. The bodies are separate and distinct below the umbilicus, but above this point united anteriorly, so that there is only one common thoracic cavity and head. The upper and lower limbs of each foetus are well developed. Two heads have, as it were, been fused into one. There are four ears, but the facial organs (eyes, noses, mouths, lips) are all rudimentary and very imperfect.

Presented by Dr. Coekburn, Civil Surgeon, Benares.

9. A bicephalous human foetus (monster) of the full term. Each head is distinct and well formed; the facial organs perfectly developed. The body is single, and there is a single pair of upper and lower limbs. No history.
10. A double-headed monstrosity ("still-born"). It consists of a female (human) foetus, of about the full term, and well developed, but possessing two heads. These are separate and distinct, and the features are perfectly formed. There is a double body, but conjoined laterally from the shoulders downwards. Two arms, two legs, a common thoracic and abdominal cavity with duplicate viscera, except the genito-urinary; the latter are single, and there is also a single umbilical cord. The monster consists, in fact, of two bodies compressed laterally, as it were, into one, and supplied with two heads, two arms, and two lower extremities.

Presented by His Highness the Maharajah of Burdwan.

11. "A foetus in which the convolutions of the brain are undeveloped, and in which there is a spina bifida. There are scarcely any frontal or parietal bones, the flat surface of the cranium being situated on a plane about half an inch above the eyebrows and the ears." (Ewart.)

12. An anencephalous human fœtus. The spinal canal is elosed.

Presented by Mr. Dutt.

13. "An anencephalous fœtus of the sixth month. To the right of the umbilicus is a large opening in the abdominal wall, through which nearly the whole of the small intestine, and a large portion of the liver protrude. The whole liver is much distorted, but of normal size; the other viscera healthy. The chest and abdomen have been opened by incisions leading from the abnormal aperture in the anterior wall of the latter, and are indicated by a stitch placed above and below the same."

"A large flaccid bag of integument protruded from the back of the deformed head. On laying it open, it was found full of reddish-grey pultaceous matter, which, under the microscope, showed nerve tubules, with granules of fat and plates of cholesterine. On cutting through this, the vertebral theca was laid open from the occiput to the sacrum, there being no vertebral arches. The theca contained a rudimentary ligamentum denticulatum, but no trace of a spinal cord. The roots of the nerves (see preparation) run through its cavity upwards and forwards, and are lost on the anterior wall of the theca, not terminating in free ends or loops. One of these roots excised, showed distinct nerve fibres, mixed with white fibrous tissue."

"The vault of the skull is within one-tenth of an inch of its floor. Its cavity, besides dura mater, contained two pulpy, bilobed masses, (rudimentary optic thalami and corpora striata). No traces of cranial nerves were distinguishable." (Colles.)

Presented by Professor T. E. Charles.

14. Portions of both feet of a native woman aged 35 (who died from dysentery, &c.), showing supernumerary great toes. The first and second proper toes are also conjoined or webbed, though distinct as regards their osseous and ligamentous structures.

The supernumerary as well as proper great toe in each foot has two phalanges. The latter (proper toe) articulates with the rounded head of the first metatarsal bone; the latter (supernumerary toe) articulates also with the inner side of the head of the same metatarsal, which is here flattened to form a smooth articular surface, and is provided with a separate synovial membrane. The anatomical conditions represented, suggest the probable development of the supernumerary member from one of the so-called sesamoid bones usually found in this situation.

15. A human fœtus at the full term of utero-gestation, but in which the lower extremities are quite undeveloped and wanting. The body ends in a curious conical fleshy mass, in which, on dissection, two or three rudimentary bones are discovered, and much fatty fibro-muscular tissue. At the end of the spine, posteriorly, is a distinct caudal appendage or tail, an inch in length, and nearly half an inch in thickness at its base.

16. "Hypertrophied thumb (no disease). Amputated at request of patient." (Colles.)

The metacarpal bone and both phalanges are about equally and proportionately hypertrophied. The metacarpo-phalangeal and inter-phalangeal joints are healthy.

The tendon of the extensor longus pollicis is of extraordinary length and thickness.

Presented by Dr. Herbert Baillie.

17. Congenital malformation of the index and middle fingers of the right hand. From a native male, aged 30, who died of disease of the spine, &c. The great thickening of the fingers is seen on dissection, to be associated with abnormal development (elongation) of the proximal phalanges chiefly. The articulations between these and the carpus are distinct and separate, and from this point they diverge like the legs of the letter V. The first and second phalangeal joints are ankylosed.

18. Talipes varus (congenital). From a native child. A very good illustration of this deformity.

Presented by Dr. Edward Goodeve.

19. "Congenital talipes varus, with chronic ulceration of the soft parts on the outer side of the foot, and sinuses running up along the tendons into the leg. From a European." (Colles.)

Presented by Professor J. Fayrer.

20. Left foot, showing (congenital) arrested development of the toes. The three outer toes are represented by wart-like fleshy prominences only, and the two inner are stunted and knobby; consist of a single bony phalanx, and bear no nails.

Taken from a native male (Mahomedan), aged 40, who died in hospital from acute pericarditis, &c.

21. Hypertrophied toe. No marked morbid change can be detected in this specimen except an overgrowth of the subcutaneous adipose tissue. The skin itself is not abnormally thickened. The bony phalanges are somewhat small, but the osseous tissue is healthy, and,—as probably belonging to a child,—is still tipped with cartilage, *i.e.*, incompletely ossified. The inter-phalangeal joints are healthy. The terminal phalanx is semi-flexed on the middle one. The toe has been removed entire, but there is no trace of the metatarso-phalangeal articulation; it may therefore have been an accessory or redundant member. No history received.

Presented by Dr. Goldsmith of Sutna, Surgeon to the Bagheleund Agency.

22. Female foetus with an aborted twin development. From an East Indian female, aged 23,—her fourth pregnancy.

"Labour set in naturally after seven months of gestation. There was dropsy of the amnion, from which about two gallons of fluid escaped during parturition. The first and second pregnancies were natural, the third terminated in abortion at the second month. The patient suffered from puerperal mania after her second pregnancy."

The complete foetus is healthy, and well developed for the period at which it was expelled. The internal organs have all been examined and found normal. But, at the posterior aspect of the

coecyx, is attached, by a firm fibrous or ligamentous band, the blighted remains of another foetus.

These consist of a series of small and large globular, cyst-like masses, grouped together in bunches, and, in the fresh state, very similar in appearance to a "hydatid chorion" or "hydatid mole." On dissection, a few of these contained simply serous or sero-sanguinolent fluid; others, some sabulous or sebaceous-looking matter; and the majority, a soft, brain-like, pulpy material, which, examined microscopically, consists almost entirely of small, round, granular cells (indifferent germ cells), imbedded in a faintly granular basis-substance; and, in parts, the existence of delicate looped capillary vessels is detected.

Besides the cyst-like bodies, there are numerous cuticular tumours, *i.e.*, little growths of cellulo-adipose tissue, solid and firm, and invested by well-developed normal skin (with hairs, and glands, &c.). The largest fleshy mass (at the summit of the foetal remains,—see preparation) is about the size of an ordinary foetal head at full term; has a firm, laminated, fibrous capsule; and is filled with pulpy material like that above described, amidst which, fragments of striped muscular fibre are discovered. Below this, there is an irregular mass of osseous tissue, which is capable of being recognised (by certain indistinct homologies) as probably representing the imperfectly developed vertebral column and pelvis of the blighted ovum. For, commencing at the fibrous medium between it and the healthy foetus, there is found a bony growth somewhat resembling a portion of the os innominatum,—the rami of the pubes and ischium, and the tuberosity of the latter being faintly recognisable; and, a foramen left between the rami and tuberosity, represents, perhaps, the acetabulum, while, a smooth shallow concave surface of bone above this, would indicate a rudimentary iliac fossa. To one of the rami is attached the rudimentary penis and scrotum, seen at the lower part of the preparation. The outline of the former is fairly marked, and its canal pervious for a short distance.

The irregular nodules of bone which succeed (lie above) the rudimentary pelvis just sketched, are very varied in shape and size. Some seem undoubtedly to represent a rudimentary spine (vertebræ); others are like the jaws, *i.e.*, of crescentic shape and pitted (alveolated). Rounded and irregular little masses of bone are also found in the interior of some of the "hydatidiform" cysts.

The placenta is single. Its structure, and that of the cord (also single), appears to be healthy.

From all the above it may be concluded (*a*) that a twin conception had taken place; (*b*) that one ovum has progressed in normal development up to the period of its premature expulsion; (*c*) that the other has, at an early period,—(but not very early, since so much osseous tissue exists, and even a rudimentary penis),—undergone a kind of hydatidiform degeneration; (*d*) that from an early period both foetuses were united *dos-à-dos* by means of the narrow ligamentous band described above; and (*e*) that the diseased condition of the one, led to the premature expulsion of both.

Presented by Mr. Chambers, L.M.S., Calcutta.

23. Extra-uterine foetation. Fragments of bone, belonging, probably, to a decomposed foetus, and removed from an umbilical fistula in the abdominal wall of a native woman (Hurridassi), aged about 20.

"About two years ago she became pregnant for the second time. During the fifth month of gestation a 'red discharge' came on,

and continued for three months, the abdomen coincidentally getting smaller. As the discharge lessened, an umbilical abscess formed, and eventuated in a fistula. Through the latter, bits of bone began to be extruded. There was slight fulness of the anterior vaginal wall, which, on being pressed, caused an oozing of pus through the umbilicus. The uterine sound could not be passed beyond the os internum, but entered easily for four and a half inches through the umbilicus into a sac or pouch-like cavity, from which, by means of a small polypus-forceps, the majority of the bits of bone (preserved) were removed."

Presented by Professor T. E. Charles.

- 24.** A human female foetus, expelled dead at the full term of pregnancy. The foetus is believed to have died in utero, at about the fifth month of gestation, at which period, it is said, the mother (a native female, aged 17, primipara) sustained a fall upon the abdomen. The movements of the child ceased after the accident, but no other local disorder or any constitutional disturbance took place, until towards the end of the ninth month. She now had a severe attack of fever, attended with "fits of a tetanic nature," and was delivered of this dead foetus.

Presented by Babu Kailas Chundra Mookerjee, M.B., Chinsurah.

- 25.** Foetus and placenta of about the sixth month, from a case of "missed abortion." The patient was delivered at the full term. The foetus is a female, and exhibits much intra-uterine maceration, with shrivelling and shrinking of the body and limbs,—a withered and attenuated appearance. It weighs 16ozs., and measures 14 inches in length. The placenta is thickened but soft, and is undergoing fatty degeneration. It weighs 10 ozs. The length of the funis is 17 inches. No history.

Presented by Professor R. Harvey.

- 26.** A similar case of "missed abortion," in which the foetus was retained in utero for two months after its death. The preparation shows a foetus of about the fifth month, very much shrivelled, and the skin sodden-looking, but otherwise perfect. The placenta is comparatively small. The maternal surface presents a softly lobulated appearance, and jelly-like consistency. It is very dark in patches (not uniformly) from blood extravasation ("apoplexy"). The greater part seems to have undergone a kind of gelatinous degeneration. Under the microscope, the placental capillaries are found much shrunken, and either occluded by very dark, opaque, granular material,—probably altered blood, or are empty and present attenuated and atrophied (hyaline) walls. The non-vascular tissue consists of round or oval cells and nuclei; the former largely charged with fat-globules or glistening molecules of mucoid material; in some places contain yellowish-red pigment-granules,—apparently from blood-imbibition.

"*History.*—Victoria Mitchell, an East Indian married woman, aged 35 years, was admitted into hospital on the 14th September 1881. She has had eleven conceptions, of which eight have proved abortive. The present pregnancy dates from about the 10th January 1881,—her last menstruation. She quickened about the middle of June, at which period the foetal heart's

sounds were faintly audible. About the middle of July, all foetal movements ceased, this being preceded by griping pains in the abdomen. When seen again, two months after, the uterine tumour was found smaller, and no foetal heart's sounds could be heard. On the 15th September, labor pains commenced at midnight, and the patient was delivered of a dead female foetus at 2 A.M.

Weight of foetus 25 ozs., length, $10\frac{1}{2}$ inches. Weight of placenta, 2 ozs.; length of funis, 11 inches."

Presented by Professor R. Harvey.

27. A very excellent specimen of "apoplexy" of the membranes, resulting in abortion at the second month. The patient was a young native woman, aged 19. It was her second pregnancy. The embryo and membranes were expelled entire, on the twelfth day of a "continued fever." The inner surface of the latter (membranes) is seen raised into several large nodules, which, on section, are found to consist of coagulated (effused) blood.

28. "Apoplexy" of the placenta, with aborted ovum of about the third month. No history. The placenta and membranes conjoined, are from half to three-fourths of an inch in thickness, and the inner (amniotic) surface is seen raised by a series of smooth nodules, of dark-red or purplish colour. Some are as large as an almond, others smaller. When a thin section is made through the whole thickness of the diseased placenta, small cecymoses are found dotting it, and at these spots blood-corpuscles, undergoing disintegration, can very readily be recognised under the microscope. The chorionic villi are atrophied; their cellular structure highly granular and fatty, but not much free fat exists. The capillary vessels show similar degenerative changes.

Presented by Professor T. E. Charles.

29. A very fine specimen of fatty degeneration of the placenta, from a case of abortion. No history.

Presented by Professor T. E. Charles.

30. Hydatidiform degeneration of the chorion. No history.

Presented by Professor T. E. Charles.

31. Hydatidiform degeneration of the chorion, from a patient (a multipara) in the fifth month of pregnancy. She had suffered from constantly repeated hæmorrhages. On the last occasion, the bleeding was so considerable, that the os and vagina had to be plugged for five hours. On removal of the tampon, the os was found sufficiently dilated to admit two or three fingers, and the uterus was then rapidly emptied of its contents.

The structure of the diseased chorion consists of a series of larger and smaller globular bodies, strung together like a bunch of grapes. These contain a thin mucilaginous fluid, and the cyst-like wall is composed of delicate capillary vessels, finely fibrillated connective tissue, and cell elements of rounded or oval shape (three to four times the size of blood corpuscles), all freely infiltrated with granules and molecules of highly refractive mucoid material.

Presented by Dr. J. Ewart.

- 32.** An early blighted ovum, with apoplexy of the foetal membranes.
No history.

Presented by Dr. Cantor.

- 33.** A similar specimen.

Presented by Babu Bissonath Gupta.

- 34.** An aborted ovum, of about the fourth week. The shaggy chorion is well seen. The embryo contained within it has become detached; it is about the size of a rice-grain, and is slightly constricted towards one pole (extremity).

Presented by Professor F. N. Maenamara.

- 35.** An aborted ovum, with its membranes of about three weeks' growth. The chorionic villi are well developed, as also the amnion. It was discharged entire. From an East Indian lady, aged 35;—first pregnancy.

- 36.** An early ovum,—probably of about the fifth week. “The larger specimen consists of the decidua vera, of which a natural dissection has been made to display the triangular outline of the body” (? cavity) “of the uterus. It measures an inch and a half perpendicularly by a little over an inch across,—from the opening of one Fallopian tube to the other. The smooth surface is the internal or visceral, and displays the tumid rugose state of the mucous membrane. The external or parietal surface is rough, and covered with shreds caused by its separation from the uterus. The smaller specimen has been opened by slitting up the membrane. The delicate amnion is easily seen, and the foetus, bent upon itself, measuring about five-eighths of an inch when unfolded. The exterior of the specimen consists of the shaggy chorion.” (Ewart.)

Presented by Professor T. E. Charles.

- 37.** An aborted human ovum of about the sixth week. From a European female.

- 38.** Embryo with membranes, including the decidua, of about the seventh or eighth week of utero-gestation. From a European lady, aged 26.

“The cause of the abortion seemed to be, first, the lifting of a heavy box, which was followed by a sensation “as if something had given way,” and, secondly, a carriage collision in the street, in which the patient was greatly frightened.” (Ewart.)

- 39.** An aborted ovum, of about the second month. The lower part of the preparation consists of a firm blood-clot, moulded to the shape of the uterine cavity. At the upper part, surrounded by the shaggy chorion and delicate amnion, is the ovum. It is nearly an inch in length; the head and extremities are apparent; the former disproportionately large, and the eyes indicated by black dots.

- 40.** A human embryo, of about ten weeks. The head is large and distinct, the outlines of the mouth and orbits are visible. The upper and lower extremities are developed, and even traces of fingers and toes recognisable.

41. "A fine specimen of a human ovum of about the tenth week. The cause of abortion was marked retroversion of the uterus. From an Eurasian female, aged 19." (Ewart.)

42. A human fœtus of about the twelfth week. It is three and a half inches in length; the head disproportionately large; the papillary membrane formed; the mouth closed. The extremities are well formed; division into fingers and toes visible. The umbilical cord is twisted.

Presented by Dr. W. K. Waller.

43. A human fœtus "about ninety days old."

Presented by Babu Saroda Kanto Doss.

44. "Human foetus and placenta" of between the third and fourth month of utero-gestation. The placenta is diseased,—“covered with lymph deposit,”—probably fatty degeneration. The fœtus is small and shrivelled.

Presented by Professor T. W. Wilson.

45. Fœtus, three and a half months old, aborted by a native woman on the thirteenth day of an attack of acute dysentery,—which subsequently proved fatal. It is five inches in length, and weighs about four ounces. The nostrils and mouth are scarcely open, the eyes are closed. The fingers and toes are well formed. The sexual organs distinctly indicate a male. The umbilical cord is well-formed and twisted.

Presented by Dr. J. Ewart.

46. "Fœtus of about the fourth month, enclosed in the amnion, and with the fatty placenta which led to its expulsion." (Colles.)

Presented by Professor J. Fayrer.

47. Fœtus four months old, aborted by a native female patient in hospital, during an attack of cholera. It is well developed, and is preserved with the membranes and placenta complete.

Presented by Dr. Francis.

48. A human fœtus four months old, with the membranes entire, and the placenta attached to the cord. From a native female who aborted in hospital.

Presented by Professor T. E. Charles.

49. Human female fœtus, believed to be of about the fifth month. "Aborted by a native woman during an attack of dysentery, to which she succumbed eighteen hours after."

Presented by Babu Chunder Mohun Ghose, M.B.

50. "Human fœtus, about five months old." (Ewart.) The placenta and cord remain attached, the membranes are wanting.

Presented by Professor J. Fayrer.

51. "Human fœtus of the fifth month, with the cord and placenta. The chest and neck have been laid open, and the pericardium removed, so as to show the relations of the thymus gland to the heart, lungs, and thyroid gland. The abdomen has been opened by an incision to the left of the umbilicus, and its anterior wall stretched by a glass rod, so as to show the course of the umbilical vein and hypogastric artery." (Colles.)

Presented by Professor D. B. Smith.

52. "Human fœtus and placenta attached. The fœtus is about the sixth month, and died in utero." (Ewart.)

The preparation illustrates well the peculiar attitude assumed by the fœtus in the pregnant uterus,—the head bent upon the sternum, the arms crossed over the chest, the thighs flexed on the trunk, and the legs upon the thighs,—all the parts closely and compactly packed together, so as to occupy the smallest amount of space compatible with the size of the uterus, and the development of the placenta, &c.

53. "Six months' fœtus, enclosed within the membranes, with the placenta, just as expelled during parturition." (Ewart.)

54. "Two fœtuses of the sixth month (twins), one of which died immediately after birth, and the other survived seven hours." (Ewart.)

Presented by Professor T. E. Charles.

55. A female fœtus of about the sixth month. The anterior wall of the thorax and abdomen has been removed, and the vessels injected through the umbilical cord. The disproportionately large size of the liver is well seen, as also the umbilical vein and hypogastric artery. The relations of the thymus gland to the heart, lungs, and trachea are displayed.

Presented by Professor T. E. Charles.

56. A human fœtus of between the sixth and seven month. It is fourteen inches in length, and about two pounds in weight. The head is covered with fine brownish hair; the eyebrows well marked, and the nails formed. The pupillary membrane is disappearing.

Presented by Professor D. B. Smith.

57. "Human fœtus" (female), "six and a half months old." (Ewart.)

Presented by Mr. Sakes.

58. Twin fœtuses of about the seventh month; one male, the other female. Both are somewhat small, but otherwise well developed. The respective umbilical cords are attached to a single (common) placenta.

Presented by Mr. Sakes.

59. A well developed female fœtus of between the seventh and eighth month.

60. "A fœtus in which putrefactive change has been far advanced prior to birth. This is particularly marked in the extremities." (Ewart.)

61. "A fœtus at the full term, badly developed, and much shrivelled from defective nutrition in utero." (Ewart.)

62. "Putrid fœtus, swollen and distended." (Ewart.) The skin presents a macerated and excoriated appearance in numerous situations. No history.

63. "A fœtus with an enormous hydrocephalic expansion of the bones and cavity of the cranium." (Ewart.) The membranous spaces between the bones are very greatly widened. No history.

64. "A full grown fœtus, delivered by spontaneous evolution. The dark spots on the surface indicate the advances that putrefaction had established prior to the expulsion of the child." (Ewart.)

Presented by Professor Allan Webb.

65. A specimen of so-called "battledore" (fan-shaped) placenta,—the cord or funis being attached to the margin or at the periphery of this structure, instead of developing, as usual, from its centre.

Presented by Professor T. E. Charles.

66. "A placenta, the cord attached to which has three umbilical veins." (Ewart.)

Presented by Professor F. W. Wilson.

67. Hydrocephalus. The head of a male foetus delivered by craniotomy at full term. When the head was punctured sixty-four ounces of straw-coloured fluid were evacuated. This fluid was slightly opalescent, had a specific gravity of 1005, and gave a copious precipitate with nitric acid (albuminous).

"The mother was a native woman aged 35. It was her seventh pregnancy. All previous ones had been easy."

Presented by Professor T. E. Charles.

68. A portion of the base of the skull of a native (male) showing unusually large and symmetrically placed Wormian bones,—one in either limb or half of the lamboid suture. Each is of oval shape, about two inches in length, and one inch in breadth.

Presented by Honorary Surgeon P. A. Minas, Hissar.

69. Human skull (native) showing two unusually developed Wormian bones, situated between the two parietal and occipital bones, in the position of the posterior fontanelle. They are separated from the parietals and from each other by well-marked sutures, and the lambdoidal suture intervenes between them and the occipital bone.

Presented by Assistant-Surgeon Kunji Lal Sanyal.

70. The lower jaw of a human foetus of about the seventh month,—prepared so as to exhibit the development of the teeth at this early period of life.

Presented by Professor W. T. Woods.

71. A superior second bicuspid tooth showing an abnormal division of its root into three fangs.

Presented by Professor W. T. Woods.

72. A second molar tooth of the lower jaw showing abnormality in the number (three), and length of the fangs.

Presented by Professor W. T. Woods.

73. A biecephalous foetal pig.

74. A biecephalous foetal kid.

75. "A duckling with one perfect head, and the rudiments of a second one springing from the right temporal and occipital region." (Ewart.)

76. A sparrow having two bills.

Presented by Mr. Blyth.

77. A kid with five legs,—the fifth being rudimentary, and projecting from the pelvis between the two hind legs.

78. A puppy with six legs. "The animal died on the fifth day after birth."

Presented by Mr. W. Bason.

79. A gosling with four legs.

Presented by Mr. J. W. Long.

80. "A chicken with two perfect and two rudimentary and imperfectly formed legs." (Ewart.)
81. A double-bodied chicken, the union being at the thorax and abdomen.
82. A double-bodied chicken, similar to the last preparation.
83. A chicken with four legs.
84. Monstrous foetal calf. It has a single head and body, but eight legs.

Presented by the Civil Surgeon, Sambalpore.

85. A double-headed duckling.

Presented by Assistant-Surgeon Durga Das Lahiri.

86. "A double monstrous kitten, with one head and face. Thorax and abdomen joined together." (Ewart.)
87. A double-bodied pig, but with only one head.
88. "A monster kid, having two bodies united together by the thorax and abdomen, with only one head." (Ewart.)
89. "Part of what would appear to be a monstrous kid or an abortive mis-shapen calf. It is an anencephalous production possessing a spinal cord, par vagum, and great sympathetic nerve. The spinal marrow and nerves are illustrated in the normal condition." (Allan Webb. *Path. Ind.*, No. 578, p. 291.)
90. 91. Two specimens of monstrous chickens, each having four legs. The bodies are conjoined, yet there is but a single head in each case.

Presented by Dr. C. R. Francis.

92. Cyclopean pig. The single orbit is situated in the median line, just below the forehead. The eyeball is large and malformed, as also is the foetal snout.
93. A similar specimen. "A monstrous foetal calf. There is only one ocular socket containing the eyeball, which is provided with two corneæ, and protected by imperfectly developed upper and lower eyelids. The eye is in the centre of the forehead,—eyelopean." (Ewart.)
94. Foetal pig showing a curiously deformed condition of the head. There are two snouts, two ears, and two well-formed eyes, but a rudimentary third eye is seen about midway between the other two, at the lower part of the conjoined forehead, giving thus a eyelopean appearance to the anterior aspect of the monster.
95. "A monster lamb, having two bodies joined together by the union of the thorax and abdomen, with one malformed head," which possesses three ears but no eyes.
96. "A pig with a head analogous to that of an elephant. It lived an hour after birth." (Ewart.)

Presented by Professor Walker.

97. A monstrous puppy. The ears are misplaced, there are no eyes, and the nostrils are rudimentary and imperfect.
98. The foetus of a horse enclosed in its membranes,—of about the fourth month of utero-gestation.

Presented by R. S. Hart, Esq., M.B.C.V.S., Calcutta.

SERIES XIX.

ENTOZOA FROM VARIOUS PARTS OF
THE BODY.

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1. A distoma hepaticum. No history.
2. "Several specimens of distoma hepaticum, from a patient who died of hepatic abscess."

Presented by Professor S. B. Partridge.

3. Three distomata (*D. hepaticum*) from the liver. No history.

Presented by Baboo Nundo Lal Ghose.

4. "A hundred and thirty-three entozoa found in the small intestines of a man." These are typical and excellent specimens of the *Fasciola hepatica* or common liver-fluke. No history.

Presented by Assistant-Surgeon Bani Madub Bose, Rajmehal.

5. Several (more than a dozen) distomata removed from the bile-duets of the liver. From a case of dysentery,—a Mahomedan (male), aged 24. They were found singly or in twos, threes, or even groups of four within the duets, either lying flattened or variously coiled upon each other. They belong to the species *Distoma conjunctum* (of Cobbold), and constitute the first and original "find" of this variety of fluke in man (9th January 1876).

Description of the Distoma. Average length $\frac{3}{8}$ " (three-eighths of an inch); average breadth $\frac{1}{10}$ " (one-tenth of an inch). Ova of the usual type, *i.e.*, oval in outline, with a double contour, and a transverse marking at the narrower end (where the operculum separates); contents granular; average length $\frac{1}{750}$ ", average breadth $\frac{1}{1333}$ ". The body of the fluke is flattened, lanceolate, extremities pointed—the posterior more obtusely than the anterior. Oral and ventral suckers in the median line,—the latter smaller than the former—(oral about $\frac{1}{30}$ ", ventral about $\frac{1}{40}$ " in diameter). Surface of the body covered with delicate spines or hairs, most numerous or thick-set over the anterior half of the same. Alimentary canal double and unbranched; terminates within a short distance of the posterior extremity of the parasite. Reproductive orifice situated a little above and to one side of the ventral sucker. Uterine folds and ovary in median of body, immediately below the ventral sucker. From the ovary, on either side, proceed the vitelline ducts to the vitelline organs (dark, dotted, and pigmented bodies) lying on either side of the fluke, between the alimentary canal and integument. Below the ovary two very distinct rounded or globular bodies—the testes, placed one on either side of the median line of the body, and not on the same level (one a little below the other). An indistinct, delicate, efferent duct (*vas efferens*) passes upwards from the higher of the two testes, and above the ovary,—to probably the reproductive papilla. In the median line, at the posterior extremity of the body, the aquiferous canal commences; dilated at first, becomes narrow as it winds upwards between the testes, and then branches into two water-vascular channels.

[See further, "On the Distoma Conjunctum as a human entozoon" by J. F. P. McConnell, M.B., the *Lancet*, 4th March 1876, p. 343, and the *Veterinarian*, April 1876; also prep. 353, Series IX.]

6. *Distoma conjunctum*. Six flukes from the hepatic bile-duets of a native male (Hindu), who died in hospital from cholera.

The bile-duets were dilated, their walls thickened, their lining membrane soft,—in a catarrhal condition. No distomata were found in the gall-bladder, which was distended with about two ounces of very dark grass-green bile. The liver generally was hyperæmic,—much fluid blood in the large portal and hepatic vessels. Hepatic parenchyma soft and greasy; lobular structure fatty.

All the flukes were dead, though the autopsy was performed within two hours after death, and before the *rigor mortis* had set in. None were found in the alimentary canal, though a round-worm (*A. lumbricoides*) was discovered in the jejunum.

7. A large number of distomata (*D. conjunctum*) removed from the biliary canals of the liver of a Mahomedan (male) coolie, aged 18, who died in hospital of acute dysentery. They were found in twos and threes, or in little colonies of six or eight,—coiled upon each other. The bile-ducts were wide and dilated generally. (See prep. 356, Series IX).

In the jejunum of the same case several sclerostomata were discovered, (see prep. No. 54).

"Medical Post-mortem Records," vol. III, 1879, pp. 203-4.

8. About half a dozen free distomata, found in the bile-ducts of the liver of a Chinese, aged 20, a carpenter. They present a somewhat shrunken appearance from long preservation in spirit.

These flukes constitute an altogether new species, and were discovered on the 9th of September 1874. They have received from Professor Cobbold the name of *Distoma Sinense*. The condition of the liver is described in connection with prep. No. 352, Series IX.

The species measures $\frac{7}{16}$ " (seven-tenths of an inch in length, by $\frac{1}{2}$ " (one-seventh of an inch) in breadth; the ova $\frac{1}{333}$ " by $\frac{1}{666}$ ". Body narrow, flattened, lanceolate; anterior and posterior extremities pointed, the latter more obtusely (ovate). The surface of the body is smooth, quite free from hairs or spines even in the fresh condition. At the anterior extremity is the oral sucker (terminal),—a hollow disc, provided with a well-defined sphincter. This leads into the pharynx, and thence into the œsophagus. The latter bifurcates in the median line of the body, (a short distance above the ventral sucker), into two alimentary canals, which diverge as they pass downwards and outwards along the sides of the body, slightly widening as they proceed, and converge again towards the caudal extremity, close to which they terminate in blind cul-de-sacs. These canals are unbranched throughout. On the inferior surface of the body is the ventral sucker, situated in the median line, and about one sixth of an inch below the oral sucker. It is also slightly smaller than the latter, measuring $\frac{1}{34}$ ", whereas the oral is $\frac{1}{25}$ ".

Just above the ventral sucker is the genital orifice. Opening into it can be seen the delicate tubular termination of a convoluted uterine apparatus. This structure is well developed, and consists of a series of very intricate windings, which communicate posteriorly with a flattened, somewhat square-shaped body,—the ovary. Occupying the interspaces between the alimentary canals and the lateral borders of the body, on either side, are the dark, pigmented-looking vitelligene structures. These communicate with the ovary by means of two delicate canals—the vitelligene ducts.

Placed a short distance behind the ovary is a large oval-shaped body, the testis; which is succeeded by a remarkable and peculiar development of branched, dendritic-looking structures, among which, in several specimens, a rounded smaller testicle can be distinguished. This apparatus appears to be connected with the male generative organs, and forms, perhaps, a kind of *receptaculum seminis*.

Starting from the upper part of the male generative apparatus, a very delicate thread-like filament runs upwards, by the side of the larger testis, to the lower border of the ovary, and above the uterine folds, to terminate at the genital orifice. This is the seminal efferent duct—(*vas deferens*).

At the caudal extremity of the body of the fluke is a pulsatile vesicle or bulb; the continuation of the same upwards, as a water-vascular canal, can also be clearly distinguished.

[See further, "Remarks on the anatomy and pathological relations of a new species of liver-fluke," by J. F. P. McConnell, M.B., the *Lancet*, August 1875; and "Parasites or entozoa of man and animals" by T. Spencer Cobbold, M.D. F.R.S., 1879. p. 28].

9. Several distomata (*D. Sinense*, *McConnelli*), removed from the biliary canals of a Chinese (male), aged 28, who died in hospital from tubercular phthisis. The flukes were alive, and exhibited undulatory movements when placed in water. The autopsy was performed three hours after death.

(See further, prep. No. 354, Series IX, and "Medical *Post-mortem* Records," vol. III., 1879, pp. 81-82.)

10. About thirty distomata (*D. Sinense*), six of which were found in the gall-bladder, and the rest in the bile-ducts of a Chinaman, (Achoo), aged 40, a carpenter, who died in hospital from remittent fever. (See also prep. No. 355, Series IX.)

11. Over a dozen distomata (*D. Sinense*), from the bile-ducts of the liver. The latter was enlarged and soft; the lobular structure indistinct; the biliary canals prominent, dilated, and full of thick yellowish secretion.

The flukes were, all but one, found singly, or in twos and threes, coiled upon themselves in the bile-ducts; one was in the gall-bladder. None in the intestine or its contents.

The patient was a Chinese, aged 35, by occupation a carpenter, who died in hospital from malarial anæmia and exhaustion, with cancrum oris, hypertrophied spleen, &c.

12. *Distoma sinense*—*McConnelli*. About fifty specimens from the bile-ducts of a Chinaman, aged 35, who died of chronic dysentery. (See further, "Medical *post-mortem* Records," vol. III, 1880, pp. 703-04.)

13. About thirty distomata (*D. Sinense*), from the liver of a Chinese carpenter, aged 40, who died of remittent fever. The liver substance generally was extremely soft and friable; of a dark olive colour; the bile-ducts dilated, filled with thick yellowish secretion, and occupied by these flukes in numerous situations.

(See further, "Medical *Post-mortem* Records," vol. III, 1880, pp. 733-34.)

14. *Amphistoma hominis* (Lewis and McConnell). "The cæcum of a native prisoner who died from cholera in the Tirhoot gaol hospital, with a number of peculiar and probably hitherto unrecognized parasites, found alive in that part of the intestinal canal."

The prisoner, Singhesur Doradh, aged 30, was attacked with cholera on the 13th, and died on the 14th July 1857. "Had not been in hospital previously, and was employed in cleaning the jail." The *post-mortem* examination was made three hours after death:—"Colon externally livid, contracted; contains a little serous fluid with flakes of mucus. Mucous membrane healthy except venous congestion. In the cæcum and ascending colon numerous parasites like tadpoles, alive, adhering to the mucous membrane by their mouths. The mucous membrane marked

with numerous red spots like leech-bites from these parasites. The parasites found only in the cœcum and ascending colon, none in the small intestines." * * * * "They are of a red colour, size of a tadpole, some young, others apparently full grown, alive, adhering to mucous membrane,—head round with circular open mouth which they had the power of dilating and contracting. Body short and tapering to a blunt point." (*Description by Dr. Simpson.*)

In the preparation, the majority of the parasites were found free, i.e., detached from the surface of the bowel, but others are seen to be still slightly adherent or entangled in the folds of the mucous membrane. The solitary glands are throughout prominent and hypertrophied, a condition which, although very common in cholera, appears, in this instance, to have existed (and still persists) in a very remarkable degree,—probably on account of the great follicular irritation which these parasites, by their presence, are likely to have excited.

Description of the amphistoma.—Greatest length from $\frac{1}{3}$ " to $\frac{1}{2}$ ", greatest breadth $\frac{1}{8}$ " to $\frac{1}{6}$ ". At the anterior pointed extremity is the oral sucker; and about $\frac{1}{12}$ " below this is the genital pore. The posterior half is composed of a somewhat flattened, circular bursa, within which is placed the caudal sucker proper. The latter is a firm cup-shaped organ, composed of circular and radiating muscular fibres. Its orifice is about $\frac{1}{10}$ " in transverse diameter. The oral sucker consists of a transversely placed oval orifice, leading to a bulbous, heart-shaped pharynx, on either side of which are nervous ganglia giving off nervous filaments in all directions, and especially two large cords which may be traced along the ventral surface of the two intestinal canals. The œsophagus is $\frac{1}{12}$ " or $\frac{1}{16}$ " in length, bifurcates a little above the genital pore, and the two canals thus formed terminate cœcally about opposite the middle half of the caudal sucker. Closely attached to the canal on either side are the main branches of the water-vascular system. Into the genital pore open the two channels of the sexual apparatus of this hermaphrodite entozoon. The vagina, in mature specimens, is filled with ova. The convolutions of the vagina and uterus occupy a great portion of the interior of the worm. In front of these convolutions, as seen from the ventral aspect, is the ovary, and closely adjoining are the lobulated testes, from which the *vas deferens* with its continuation, the *ductus ejaculatorius*, may be traced.

The ova have firm capsules, and are provided with opercula; they average $\frac{1}{170}$ " in length, by $\frac{1}{350}$ " in diameter.

These specimens of amphistoma constitute a species entirely new to science, and, with the exception of certain specimens of the same parasite collected by Dr. J. O'Brien of Gowhatty in June 1871, — (now in the possession of Dr. T. R. Lewis of Calcutta) — have not been previously described, nor, indeed, have any species of the genus to which they belong been, heretofore, found to affect man.

[See further, "*Amph. hominis*, a new parasite affecting Man." By T. R. Lewis and J. F. P. McConnell; *Proceedings of the Asiatic Society of Bengal*, August, 1876; also Cobbold on *Parasites of Man and Animals*, 1879, p. 36.]

Presented by Dr. Simpson, through Professor E. Goodeve.

15. "Tænia solium expelled by a single dose of Kameyla powder. The head is not preserved." (Ewart.)

16. *Tænia solium*, showing the upper or anterior portion of the worm, and the very minute character of the segments as the neck and head are approached, neither of which has, however, been preserved.
17. "The greater part of a tapeworm" (*T. solium*), found near a diverticulum of the small intestine of a man who died, a few hours after admission, from intestinal obstruction caused by a twist of the end of the ileum." (Ewart.)
18. A portion of a tapeworm, (*T. solium*), which measured about twelve feet. The head is wanting.
Presented by Babu Womesh Chunder Dass.
19. *Tænia solium*. A portion of a tapeworm passed *per rectum* in a curiously twisted and knotted condition, by a European sailor suffering from dysentery.
Presented by Professor Norman Chevers.
20. *Tænia medioanellata*. The truncated square-shaped head of this variety of tapeworm, and its four suckers (unprovided with hooklets), are well seen in this preparation.
"The entozoon after removal from the body, at the *post-mortem* examination, was exceedingly active in its movements, and was mounted on tale prior to death, hence the unusual appearance of the proglottides."
- Presented by* Professor Norman Chevers.
21. A very fine specimen of *Tænia medioanellata*. The head, however, is not present.
22. Portions of two tæniæ (*T. medioanellata*), from the small intestine of a European sailor. The heads of both worms are readily recognisable.
23. The head, neck, and about six inches of the upper portion of a tapeworm (*T. medioanellata*) found in the small intestine of a native male patient - (a Mahomedan), - who died from dysentery. The characteristic square-shaped head with its four large suckers is well seen.
24. The head and about twelve inches of the body of a mature tapeworm (*T. medioanellata*), removed from the small intestine of a Hindu, aged 50, who died of pneumonia. The worm was alive when found at the *post-mortem* examination.
25. "Two accephalocysts from the spleen of a patient in the Native Hospital." (Ewart.)
26. "Portion of a cyst of a tumour displaying a clustering mass of small hydatids in various stages of development." (Ewart.)
No history.
27. "A hydatid cyst, as large as the foetal head, in the right lobe of the liver of Private James Middleton, H. M.'s 51st Light Infantry, who died at Shyra Gullee, nine miles from Murree, in August 1863. The cyst has led to absorption of part of the right lobe, only a small lamina of hepatic parenchyma being now seen surrounding part of the tumour."

History.—"The patient took ill and died within nine hours. The cause of death was considered (after the autopsy) to have been rupture of the hydatid cyst, which was supposed to be owing to a shock, rather than a fall, which

the man sustained two or three days before, while sitting astride of a branch of a tree. The shock was of some force. At the time "he felt something had given way in his inside," and his testicles were slightly hurt. The symptoms, on admission into hospital, were coma, with stertorous breathing, feeble action of the heart, with loss of pulse, deep but slow inspiration. Pupils were contracted. The treatment was cold douche to the head and stimulation. The man rallied a little, and latterly was capable of being roused when spoken to in a loud voice, and indicated the umbilical region as the seat of pain; he was not able to reply to questions. The prostration was extreme, the pulse extinct, and the man rapidly sank."

"At the autopsy—(every organ but the spinal cord was examined)—the only appreciable cause of death was discovered in the liver, which was the seat of an enormous sacculated cavity, extending throughout the entire thickness of the right third of the right lobe, and reaching a couple of inches below its inferior margin. The lining membrane of the cavity is of great thickness and strength. Lying loosely within it was an opaque milk-white sac of great delicacy, and ruptured, but it was partially filled by a transparent and clear fluid. There was no purulent admixture. A peculiar grey granular sediment was noticed on the sac. The substance of the liver was healthy, without a trace of recent or remote inflammation. But there were strong and extensive adhesions to the neighbouring parts."

"The man was of moderate muscular development, and, on reference to his Medical History Sheet, the surprising fact was discovered that, since his enlistment in 1855, he had only been eleven days in hospital for intermittent fever, two years ago. He was known as a healthy man, and none of his comrades could remember that he ever complained of pain in the right side."

Presented by Dr. R. F. Lyons, Assistant Surgeon, H. M.'s 101st Regiment.

28. A large number of hydatids found within a parent-cyst, about the size of the foetal head, situated in the upper and posterior portion of the right lobe of the liver.

The patient was a Scotchman, aged 49, Chief Officer of a sailing vessel.

"He was a man of very bronzed complexion from exposure, and was sallow on admission. Was admitted into the Presidency General Hospital on the 6th September 1880. Had suffered from dysentery in 1871 and previously. Left England in May (1880), in good health. On the 14th and 15th July had two severe rigors,—lasting half an hour. Has suffered from constant constipation and frequent vomiting, with severe pain over the bowels and in the liver ever since, and has been confined to his bunk." * * * * * "Physical examination showed enlargement of the liver,—dulness extending, in the right nipple line, to two fingers' breadth below the costal arch." * * * * * "On the 13th September the liver dulness was found to extend to within two fingers' breadth to the *left* of the umbilicus. From the 14th there were occasional rigors, followed by considerable evening rise of temperature, and great pain in the lumbar region and right flank. On the 25th, the liver was aspirated—the diagnosis being probably liver-abscess—and fourteen ounces of very thick tenacious pus came away, followed by clear serum (a small quantity). The needle, on withdrawal, was found blocked by semi-transparent, white tissue, and several similar pieces were discovered in the pus removed. These all presented the appearances of portions of a suppurating hydatid cyst."

Temporary relief was only afforded by the operation, which had to be repeated on the 28th, on account of great local pain and dyspnoea. This time no fluid of any kind could be withdrawn, and the man died, rather suddenly, the same night.

"There was no fluctuation to be felt in the liver from first to last, though carefully looked for. The resistance offered by the liver was marked, and

considerable force had to be exerted in using the aspirator needle. There was no jaundice until the 25th September. Rapid emaciation during the last fortnight."

"At the *post-mortem* examination, held on the 29th September, the liver was found adherent to all the surrounding tissues, except at the anterior under surface; and, on attempting to remove the organ, the knife penetrated a large abscess-cavity at the upper right surface of the right lobe. There was a gush of pus mingled with opaque cyst-membranes in large numbers. The cavity was lined by a thick opaque membrane, which readily peeled off. Above and behind was a large cyst, which was also opened during removal, and which contained perhaps two pints of clear fluid under great pressure, for it escaped with great violence into the right pleural cavity, and with it came out several large transparent cysts, like jelly-fish, and numerous smaller ones. The bile-duct was distended to the size of an ordinary thumb, and was found to be blocked, at its lower part, by a piece of opaque bile-stained membrane. It contained also several pieces of transparent bile-stained cyst-membrane, and much gelatinous bile-stained substance of the consistency of jelly. The gall-bladder was about the size of a small egg. The surface of the liver was much nodulated. The other organs were not carefully examined." (*Note by Dr. Joubert.*)

The anterior cyst which had suppurated (*see* prep. No. 351, Series IX), has a distinct lining membrane, two to three lines in thickness, is soft, pulpy, and pus-infiltrated. The posterior cyst has an equally thick wall, which, however, is tough and leathery in consistency. Above, it reaches and is adherent to the diaphragm. The liver-parenchyma is throughout bile-stained. The interlobular tissue slightly thickened (*eirrhotie*). The accephalocysts are more than forty in number, and vary in size from that of a small orange to that of a pea, are clear and transparent, or, some of them, partially bile-stained. With these are preserved large fragments of the semi-transparent endo-cyst belonging to the posterior parent or mother hydatid-sac, which escaped at the same time as the brood of echinococci contained within it.

Presented by Dr. C. H. Joubert, Presidency General Hospital, Calcutta.

29. "Sixty-seven lumbrici taken from the stomach and small intestines of a woman who had suffered from diarrhoea and vomiting for a year and two and a half months. All the organs were found healthy." (*Ewart.*)

Presented by Professor F. W. Wilson.

30. A male and female round worm—*A. Lumbricoides*. The curved inferior extremity or tail of the former is well seen, as also the projected spiculum.
31. "A portion of the ileum containing a lumbricus. The entozoon is bent upon itself, so that both its caudal and cephalic extremities are seen." (*Ewart.*)
32. "Seventy-five (75) round worms removed from the bowels of a native male, in a single day, after the administration of a few grains of santonin." (*Ewart.*)
33. "Seven hundred and seventy-five (775) round worms passed by a child, named Ghafoor Alli, aged one year and nine months. Between the 20th and 25th April (1867), 6,000 of these worms

were passed under a treatment consisting of large doses of calomel and scammony, followed by turpentine and castor oil. The worms, now preserved, were passed in one stool. They are from two to seven inches long, and weigh from one to seven grains. On one occasion the child passed 2,750 of these worms." (Colles.)

Presented by Dr. S. C. Townsend, Civil Surgeon, Nagpore.

34. A typical specimen of lumbricus (*A. lumbricoides*—female) passed "by a European gentleman."

35. A large sized round worm (*A. lumbricoides*) curiously twisted upon itself so as to form a knot. It was found, with six others, in the jejunum of a native male, aged 40, who died in hospital of cerebro-spinal meningitis.

36. "*Trichocephalus dispar*, found in the stomach and small intestine (but not in the large intestine) of Bajoo, a Hindu male, who died of cirrhosis hepatis." (Colles.)

Presented by Professor Chuckerbutty.

37. A large number of whip-worms (*Trichocephalus dispar*), removed from the cœcum of an East Indian boy, aged seven years. Several were attached by their delicate filamentous heads to the mucous membrane of the bowel, the rest were free.

38. The cœcum and a portion of the ascending colon of a native girl, aged eight years. The former is seen infested by whip-worms (*Trichocephalus dispar*),—a large number adhering to the mucous membrane. The latter (colon) exhibits chronic, superficial, pitted, dysenteric ulceration.

39. A large number of *Trichocephali* removed from the cœcum of a native female, aged 41, who died from (idiopathic?) tetanus. In the jejunum thirteen round worms (*lumbrici*) were found. ("Medical Post-mortem Records," vol. III, 1879, pp. 65-66.)

40. The cœcum occupied by a small colony of whip-worms (*Trichocephalus dispar*). From a native male, aged 50, who died of fibroid phthisis.

41. The cœcum and a portion of the ascending colon of a native male patient, aged 30, who died from hepatic cirrhosis. To the mucous surface of the bowel numerous trichocephali (*Trichocephalus dispar*) were found adherent. Several may still be seen attached, but a great many have dropped off.

42. The cœcum infested by a large colony of whip-worms (*Trichocephalus dispar*). The host was an East Indian male, aged 40, who died from morbus Brightii.

43. A number of thread-worms (*Oxyuris vermicularis*), found in the rectum of a native female, aged 27, who had suffered for a long time from leucorrhœa, and died in hospital of chronic diarrhœa.

("Obstetric Post-mortem Records," vol. I, 1880, pp. 749-50.)

44. Thread-worms collected from the evacuations of several native children attending the medical dispensary of the hospital.

45. A Guinea worm (*Dracunculus medinensis*), about 24 inches in length.

46. *Filaria* or *dracunculus medinensis*. Another specimen, about 18 inches in length.
47. A portion of a Guinea worm, measuring about 20 inches.
48. "An entire Guinea worm, forty inches long, removed from John Michael, a Jew of Nineveh, aged 40. Two other *filariæ* had been removed from this patient, but were broken in the process." (Colles).

Presented by Professor J. Fayrer.

49. Six Guinea worms (*D. medinensis*), five of which are entire, and the two largest about thirty inches in length. "These were extracted from prisoners in the Sirsa Jail Hospital, during the rainy season of 1871."

Presented by Honorary Surgeon J. Rehill, Civil Medical Officer, Sirsa, Punjab.

50. About twelve inches of a Guinea worm; the hooked caudal extremity is well demonstrated.

Presented by Dr. A. Crombie.

51. A Guinea worm (*F. medinensis*), eighteen inches long, removed from an abscess in the calf of the leg of a Hindu, aged 30. "He was an inhabitant of Furukabad, where the worm is not known, but a year ago, he went to Sudwar on the Jumna, and resided there for five months. About four months ago, he experienced an itchy sensation in the calf of the left leg; gradually an ulcer formed, and he then detected the worm. On attempting to remove it, the worm broke after about six inches had been drawn out. The rest remained imbedded in the tissues; the part became very painful, and a fluctuating swelling developed. On admission into hospital this was incised, and the worm escaped with a considerable quantity of very offensive pus."

Presented by Professor J. A. P. Colles.

52. *Filaria hominis oris*,—a nematoid worm "vomited by a child." The entozoon is $5\frac{1}{2}$ " in length, and about $\frac{1}{3}$ " broad. It has a brownish colour, but is so opaque and hard from long preservation in spirit, that even after several days' maceration in glycerine-solution nothing can be determined as to its internal structure. The anterior extremity is truncated, and here a simple rounded buccal cavity or mouth is distinctly recognisable. The posterior extremity is obtusely pointed;—has no spicula. The *filaria* seems to be immature, and corresponds most closely with the *F. hominis oris* of Leidy.

(*Vide*, *Proceed. Philadelph. Acad. of Nat. Sciences*, 1850, p. 117, quoted by Cobbold in *Parasites and Entozoa of Man and Animals*, 1879, p. 207).

Presented by Dr. J. H. Condon, Civil Surgeon, Cawnpore.

53. About a dozen "*Sclerostomata*" (*S. duodenale vel Dochmius duodenalis*), found adherent to mucous membrane of the jejunum. From a native male patient, aged 25, who died of chronic dysentery,—(6th January 1879).

It is believed that this constitutes the first recorded "find" of this worm in India,—probably because not carefully looked for previously. Since the above date, these parasites have been discovered in numerous cases, and, in fact, seem

to be by no means rare, as *accidental* entozoa, in the small intestines of natives of Bengal. It is questionable, however, whether they, as frequently, produce any specific symptoms or lesions. The anæmic chlorosis described by Griesinger in Egyptians, and the hypoæmia associated with these worms in Brazilian subjects, recorded by Wucherer, are conditions which have not so clearly been traced to the presence of these worms in the cases observed here. Although, in the majority, anæmia was a prevailing element, yet it seemed to be attributable, more specifically, to dysentery and malarial complications, and but indirectly, if at all, to these parasites; and, in several cases, they have been encountered in subjects dying from some acute or sthenic disease, where the organs and tissues of the body presented no bloodless condition, but, on the contrary, their general appearance precluded the existence of this condition during life. On the whole, therefore, the presence of sclerostomata in the bowels of people of this country appears to be accidental. Is probably nearly as common as the round worm (*lumbricus*) in natives; and it has yet to be determined whether these entozoa are the efficient cause of any recognisable disease or disorder.

The anatomical characters of these nematoids correspond, in all essential particulars, with those described by the discoverer (Dubini), and subsequent observers.* They are, however, by no means confined to the duodenum; in fact, have more frequently been found in the jejunum, and even lower down in the small intestine. The females always predominate,—in about the proportion of five to one male dochmius.

(See further, "Medical *Post-mortem* Records," vol. III, 1879, pp. 5-6).

54. *Dochmius duodenalis*. About twenty of these worms (male and female), removed from the jejunum of a Mahomedan coolie, aged 18, who died in hospital from acute dysentery. The biliary canals of the liver in this case were filled with flukes of the variety known as *distoma conjunctum* (see prep., No. 7.)

"Medical *Post-mortem* Records," vol. III, 1879, pp. 203-04.)

55. About half a dozen sclerostomata (*S. duodenale*), from the duodenum and upper part of the jejunum of a native male (Hindu), who died from erysipelas, after the operation of removal of an "elephantoid" serotum. In the thin fœcal contents of the large intestine one whip-worm (*Trichocephalus dispar*), and one thread-worm (*Oxyuris vermicularis*), were found.

56. About a dozen sclerostomata, male and female, collected from the duodenum and jejunum of (1) a native boy, aged 12, who died from malarial anæmia and exhaustion; (2) a native male, aged about 40, who died from chronic bronchitis with bronchiectasis;—no anæmia, no bowel lesion;—(3) a native male, aged 30, who died from remittent fever;—no anæmia, no bowel lesion.

57. *Dochmius duodenalis*. About twenty-four of these worms (both male and female), found in the contents of the small intestine of a native male, aged 32, who died in hospital from chronic malarial anæmia and dysentery.

58. Fifty sclerostomata (male and female), from the small intestine of a native male (Hindu), aged 28, who died of acute cerebro-spinal meningitis.

* See especially Cobbold, on *Parasites and Entozoa of Man and Animals*, 1879, p. 211

59. About forty of these same worms collected from the jejunum and upper part of the ileum of the following cases:—(1) four, from an anæmic native (male), aged 40, who died of dysentery; (2) two, from a native male, aged 25, who died of pneumonia, (no anæmia); (3) eighteen, from a native male, aged 26, who died of traumatic tetanus, (no anæmia); (4) over a dozen, from a native male, aged 26, who died of cirrhosis of the liver, &c. (anæmic).
60. The pyloric end of the stomach, the duodenum, and a portion of the jejunum, with numerous sclerostomata, adhering to the mucous membrane of the intestine. From a native male, aged 26, who died of morbus cordis.
61. More than a dozen sclerostomata (*S. duodenale*), found in the thin fecal contents of the small intestine of a native male, (Hindu), aged 35, who died of acute sloughing dysentery; and also, about half a dozen of these same parasites from the jejunum of a native (male), aged 30, who died from pyæmia, following a compound comminuted fracture of the foot.
62. The duodenum of a native male, aged 30, who died from cirrhosis of the liver. A large number of sclerostomata are seen adhering to the mucous surface.
63. Two distomata (*Fasciola hepatica*), from the bile-ducts of a portion of the liver of a cow. They are opaque, brownish-looking, an inch and a half in length. The oral and ventral suckers are well-marked, and, just above the latter, is the protruded spiral penis of the fluke.
- The bile-ducts were considerably dilated, and their walls thickened, rigid, and partially calcified.
64. *Tania serrata* from the dog,—the mature tape-worm of the *cysticercus pisiformis*.
65. *Cysticerei taniæ mediocanellatæ*. A portion of measly beef exhibiting these parasitic cysts, which vary in size from that of a barley-grain to that of a pea.

Presented by Mr. J. Bowser.

66. *Cysticercus (telæ) cellulosæ*. Two sections of muscular tissue of the pig infected by cysticercus ("measly pork").
- The parasites are seen to be diffusely scattered in the flesh, and form little bladder-like or vesicular bodies, varying in size from that of a mustard-seed to that of a pea,—a few still larger. On dissection, each such vesicle is surrounded by a delicate cyst of connective tissue (containing also a few elastic filaments), which isolates it from the surrounding muscular substance. The cysticercus proper is rounded in outline, has an outer delicate transparent membrane, and an inner granular layer, within which lies the embryo, and from which it can be squeezed out on forcible pressure. The slightly conical proboscis or head, with its double circlet of hooks, and four suckers, is clearly demonstrable; and, in some specimens, seems to have undergone further development, so as to show a transversely laminated structure behind the head (*i.e.*, the neck and commencement of the body). In others of these capsules a considerable portion of the scolex or larva of the parasite is observed, forming a coiled vermiform body, in

which the transverse striation, above noted, is also well exhibited. Granular calcareous particles and star-shaped crystals are found among the contents of each capsule, and a large number of round cells with granular opaque contents.

67. "The liver and stomach of the rat (*mus decumanus*). There are cysts on the liver containing *cysticercus fasciolaris*. One cyst hanging by a pedicle is observed, from which the entozoon has extruded." (Ewart.)

Presented by Professor Crozier.

68. "Liver of a domestic rat (*mus decumanus*), with a cyst in its centre from whence was extracted a tænia,—and which is appended to its parent cyst. There are also two other cysts containing remnants of similar dead worms." (Allan Webb.—*Pathologia Indica*, No. 185, page 257.)

These are evidently specimens of the *cysticercus fasciolaris*, which, as Von Siebold and others have shown, often develops, even while encysted, into a tænia-like form, but only acquires the characters of the mature tænia (*T. crassicolis*) in the intestine of the cat. J. F. P. McC.

Presented by Mr. Evans.

69. Two hydatid cysts from the liver of a bullock. One contained a limpid fluid, the other (as shown in the specimen) semi-solid, sebaceous material. "In both cysts a large number of scolices with hooklets, &c., were discovered on microscopic examination."

Presented by Dr. J. Cleghorn, 10th N. I., Mooltan.

70. Portions of the lungs, liver, and heart of a fat cow. The lungs were studded with hydatids, varying in size from that of a pigeon's egg to that of an orange. They possessed firm, fibrous capsules, directly continuous with, and inseparable from, the surrounding pulmonary tissue. Within the capsule, a large, transparent, hyaline bladder, filled with clear limpid fluid (neutral in reaction, and non-albuminous). In some of the tumours a little yellowish sebaceous material intervenes between the fibrous capsule and the akephalocyst. Some of the cysts were quite barren, others enclosed secondary free smaller cysts and cystic buddings from the inner surface of the mother-cyst, but all were structureless in character, and no head or hooklets could be detected at any part of them, or in the fluid contents.

In the heart (portion preserved) there is one hydatid cyst, the size of a walnut, situated in the anterior wall of the right ventricle, and occupying not only its whole thickness, but projecting also a little into the ventricular cavity, beneath the endocardium. The external capsule is firm, fibrous, and inseparable from the muscular tissue of the cardiac wall. A very large amount of sebaceous-like material is collected between it and the contained akephalocyst. The contents of the latter are fluid and turbid. Under the microscope, much fat, cholesterine plates, epithelium, and granular matter are found, but no hooklets. The division of the hydatid membrane into the ekto- and endo-cyst is well marked, and also, the laminated character of the former. The latter appears to be barren,—contains no daughter-cysts nor parietal sprouts.

In both the lungs and the heart, the indurated thickened condition of the capsule seems to have led to the death of the hydatid-broods.

The liver contained no hydatids, but the bile-ducts are seen to be dilated, and their walls partially calcified. Within them six distomata (*D. hepaticum*) were found, coiled upon each other, two of which have been preserved (*see* prep. No. 63).

Presented by Moulvie Tameez Khan, Khan Bahadoor, Calcutta.

71. "*Oxyuris curvula* from the large intestine of *equus caballus*." (Ewart.)

72. Four nematoid worms, each about $1\frac{3}{4}$ " in length, with a smooth, oval-shaped, simple mouth, and a pointed caudal extremity. Other characters not recognisable owing to long preservation in spirit, and consequent opacity and hardening. Probably *oxyuris curvula*, from the horse.

73. "Cancer of the stomach of an Australian horse. The foreign growth is about the size of a walnut, and situated between the mucous and muscular tunics. Its section shows a few cavities in its substance." (Ewart.)

This is not a cancerous growth but a parasitic tumour,—a circumscribed nodular hypertrophy of the glandular and submucous tissues of the stomach of a horse, due to the irritation produced by the presence of certain nematoid worms. On section, it is seen to be honeycombed or alveolated,—the alveoli constituting the nests of the entozoa. From one of them four mature filariæ were extracted, and proved on examination to be the *Filaria megastoma* of Schneider (*Spiroptera megastoma* of Rudolphi),—the large-mouthed maw-worm of the horse. J. F. P. McC.

74. A similar preparation,—a nematoid tumour from the stomach of a horse.

Presented by R. S. Hart, Esq., M.R.C.V.S., Calcutta.

75. *Filaria oculi vel papillosa*, removed from the eye of a small country-bred horse. "It was very active while in the eye, but died almost immediately after removal."

Presented by Dr. F. W. Hyginson, Civil Surgeon, Gonda, Oudh.

SERIES XX.

CALCULI, CONCRETIONS, AND FOREIGN BODIES FROM THE URINARY AND DIGESTIVE ORGANS, AND FROM OTHER PARTS OF THE BODY.*

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A series of calculi presented to the Museum by RAI RAM NARAIN DAS, BAHADOOR, late Lecturer on Surgery to the Campbell Medical School, and First Surgeon to the Campbell Hospital, Calcutta. (Descriptions taken from the Donor's "Monograph on Lateral Lithotomy Operations," Calcutta, 1876, pp. 47-93.

1. A small oval calculus of a light yellowish colour, slightly tuberculated on its external surface. It weighs 4 drachms. Was extracted successfully from a Hindu, aged 50, at the Budaon Government Dispensary, 20th January 1849.

* Calculi in the kidneys (and ureters) as seen *in situ* are described in Series XI.

The nucleus is of dark colour, and composed of uric acid with traces of urate of ammonia. The surrounding laminæ, of a light yellowish colour, have a similar mixed chemical composition.

2. A large oval calculus, of dark brown colour, weighing $2\frac{1}{2}$ ounces. Extracted successfully from a Hindu, aged 50, on the 20th June 1849, at the Budaon Government Dispensary.

The nucleus is composed of urate of ammonia, and the surrounding laminæ of uric acid variously mixed with oxalate of lime.

3. A large hour-glass-shaped calculus, of light yellow colour, with white deposits here and there on its surface,—weighing one ounce. Extracted successfully from a Hindu, aged 50, at the Budaon Government Dispensary.

The nucleus is not well defined, is soft and porous, consists of urate of ammonia; the surrounding laminæ are more compact, and have a similar chemical composition.

4. An oval-shaped calculus, of white colour externally, weighing 9 drachms. Extracted successfully from a Mahomedan, aged 40, at the Budaon Government Dispensary.

The nucleus is excentric, and composed of urate of ammonia and uric acid in about equal proportions. The surrounding and peripheral layers are well defined, and have a similar composition.

5. A large, tuberculated, very hard and compact calculus, weighing 9 drachms. Removed successfully from a Hindu boy, aged 12, at the Budaon Government Dispensary.

The nucleus consists of uric acid with slight traces of urate of ammonia and oxalate of lime; the succeeding layers are uniform and not laminated,—are composed of oxalate of lime and urate of ammonia.

6. A rounded, flat calculus, of brown colour, slightly granular on the external surface, and weighing one ounce. From a Hindu, aged 35. The operation was successful.

The nucleus is composed of uric acid and urate of ammonia in equal proportions, and is porous; the surrounding laminæ are compact, and principally composed of uric acid with traces of urate of ammonia. Budaon Government Dispensary, 24th July 1849.

7. A small oval calculus, of light yellow colour, with white deposits here and there on its surface. Weight, 3 drachms.

Successfully extracted from a Hindu boy, four years of age, at the Budaon Government Dispensary.

The nucleus is wholly composed of urate of ammonia. The surrounding layers are of the same composition and well marked.

8. Two calculi,—one medium-sized, the other small. They are of light yellow colour, speckled white at the surface. Together weigh an ounce. From a Hindu lad, aged 16. Operation successful. The nuclei are of whitish colour, and composed of urate of ammonia with oxalate of lime and uric acid. The successive laminæ have a similar composition.

9. A small, oval, flat calculus, minutely tuberculated on the surface, and weighing 4 drachms. Extracted successfully from a Hindu, aged 35. The nucleus is excentric, and is equally composed of uric acid and urate of ammonia. The surrounding part is

uniform, not laminated, is soft and porous, —composed entirely of urate of ammonia.

10. A small, minutely tuberculated calculus, with another the size of a pea, together weighing 2 drachms.

Removed successfully from a Hindu boy, six years of age, at the Budaon Government Dispensary.

The nucleus of the larger stone is wholly composed of urate of ammonia, and the surrounding whitish layers of uric acid and urate of ammonia, in about equal proportions.

11. Two calculi,—one of large size, the other about that of a bean. The former has a polished surface; the latter is rough. They weigh together $3\frac{1}{2}$ ounces. From Mahaboolah, a Mahomedan, aged 60. Operation successful.

The nucleus of the larger stone is of dark colour, and chiefly composed of uric acid. The surrounding laminae are well defined, have a similar composition, but with traces also of urate of ammonia.

12. Two small calculi, of a light brown colour, having smooth, polished surfaces, and weighing 200 grains. From a Hindu boy, aged 10 years, successfully operated upon at the Budaon Government Dispensary, on the 18th September 1849. The nucleus, surrounding strata, and crust are chiefly composed of oxalate of lime, but with traces of urate of ammonia.

13. A small, flat, oval calculus, polished on its external surface, and weighing 60 grains. Successfully removed by operation from a Mahomedan, aged 50.

The nucleus is porous and not well defined; consists of uric acid with traces of urate of ammonia, and the surrounding laminae have the same chemical composition.

14. An oval calculus, of light brown colour, weighing 180 grains. From a Mahomedan, aged 30. Operation successful.

The nucleus is of dark colour, is composed of uric acid with traces of urate of ammonia. The surrounding strata are sharply defined, have a similar composition, and, towards the surface, traces of phosphate of lime are found.

15. A small oval calculus, of light brown colour, polished on its external surface, and weighing 40 grains.

Successfully extracted from a Hindu, aged 50. The nucleus consists of uric acid with traces of urate of ammonia. The surrounding layers are well defined and have a similar composition.

16. A moderate-sized calculus, of light brown colour externally, and on section exhibiting darker and lighter coloured concentric laminae. It weighs $8\frac{1}{2}$ drachms. Was successfully removed from a Hindu, aged 40. The nucleus is of dark colour and porous, is wholly composed of urate of ammonia; the succeeding layers consist of urate of ammonia variously mixed with oxalate of lime, and the crust contains a larger proportion of the latter.

17. A large, flat, oval-shaped calculus, of light brown colour, weighing an ounce and a half. Extracted successfully from a Mahomedan, aged 40.

The nucleus is of dark colour, and consists chiefly of uric acid, with traces of urate of ammonia. The surrounding layers are

composed of uric acid and urate of ammonia in about equal proportions.

- 18.** A large calculus, of dark yellow colour, with white deposits on its surface, which is smooth and polished. Weight $2\frac{1}{2}$ ounces. Successfully removed by operation from a Mahomedan, aged 20.

The nucleus is of brownish colour, consists of uric acid, with slight traces of urate of ammonia. The surrounding layers are well marked, are composed of uric acid and urate of ammonia in about equal proportions, and the crust of urate of ammonia only.

- 19.** A section of an oval-shaped calculus, of yellowish-white colour, which, when entire, weighed an ounce and a half.

Extracted successfully from Doomah, a Mahomedan boy, aged 12 years. Budaon Government Dispensary, 21st October 1849. The nucleus is composed of urate of ammonia with traces of cystic oxide. The surrounding layers are porous and homogeneous, and consist of urate of ammonia with uric acid, variously mixed with phosphate of lime.

- 20.** A compact oval calculus of large size, dark yellow in colour, its external surface granular or tuberculated, but polished. It weighs 14 drachms. Was successfully removed by operation from a Hindu, aged 20.

The nucleus consists of uric acid and traces of urate of ammonia. The surrounding laminæ are well defined, and have a similar composition. The crust is darker in colour, and chiefly made up of uric acid.

- 21.** A rounded calculus, of chalky colour, with a polished surface, and weighing 180 grains. From a Hindu boy, aged six years. Operation successful. The nucleus consists of uric acid with slight traces of urate of ammonia; the first surrounding layers are coloured and composed of urate of ammonia, with traces of uric acid; and the succeeding layers and crust are white, and mainly made up of urate of ammonia.

- 22.** An oval, flat calculus, of chalky colour, and markedly tuberculated at the surface. With it is preserved a smaller conical calculus removed at the same operation,—which was successful.

From a Hindu boy, aged eight years.

The nucleus of the larger stone consists of urate of ammonia; the surrounding laminæ of urate of ammonia and uric acid in about equal proportions; and the crust, which is whiter, contains traces of phosphate of lime.

The calculi together weigh 180 grains.

- 23.** A medium-sized, oval-shaped calculus, of light yellow colour, weighing 4 drachms.

Removed successfully from a Hindu boy, aged eight years.

The nucleus consists of uric acid and urate of ammonia; the surrounding rings are well marked, and mostly composed of urate of ammonia, with traces of uric acid.

- 24.** An oval, medium-sized calculus, of brownish colour externally, weighing an ounce and a half.

From a Hindu, aged 45. Operation successful.

The nucleus is composed of urate of ammonia, with traces of cystic oxide; the next surrounding layer of urate of ammonia variously mixed with oxalate of lime, and containing also traces of cystic oxide; the peripheral layer is whitish, and made up of urate of ammonia with oxalate of lime.

25. An irregularly ovoid calculus, weighing 6 drachms, extracted successfully from a Hindu, aged 35.

The nucleus is excentric, and consists of uric acid and urate of ammonia in equal proportions; the succeeding layers of uric acid, with only slight traces of urate of ammonia; the crust, whitish and porous, has a similar chemical composition.

26. An oval-shaped calculus, of dark colour, weighing 2 ounces.

From a Hindu, aged 40. The patient died seven days after the operation.

The nucleus is composed of urate of ammonia, and is surrounded by layers of the same, variously mixed with oxalate of lime. This is succeeded by a whitish lamina, consisting almost entirely of oxalate of lime (with only traces of urate of ammonia); the crust is of dark colour, and wholly composed of ammonium urate.

27. Two small calculi; broken during extraction. Operation successful. From a Hindu boy, aged eight years. The nucleus and surrounding laminæ are not distinct. The structure is throughout soft and friable. Both stones are composed of uric acid and urate of ammonia.

28. A large, oval, slightly flattened calculus, of light yellow colour, a little tuberculated at the surface, and weighing 500 grains.

From a Hindu, aged 40. The patient died thirty-six days after the operation.

The nucleus is large, ill-defined, and porous; consists of urate of ammonia with uric acid. The surrounding laminæ have a similar composition, but are well marked, hard, and compact.

29. An hour-glass-shaped calculus, of whitish colour externally. It weighs 7 drachms. Extracted successfully from a Hindu boy, aged 10 years.

The nucleus consists of uric acid and urate of ammonia in about equal proportions; the surrounding layers of urate of ammonia with only traces of uric acid. The constricted portion is softer, and contains much phosphate of lime.

30. An irregularly rounded calculus, of dark brown colour, speckled with whitish deposits on the external surface. It weighs 13 drachms. Removed successfully by operation from a Hindu, aged 35.

The nucleus consists of urate of ammonia with slight traces of uric acid. The next surrounding layer is of a light yellow colour, and composed of equal proportions of urate of ammonia and uric acid. The succeeding layers have a similar composition, but are not well defined towards the periphery. The large-sized tubercles on the crust have also the same chemical composition.

- 31.** A large rounded calculus, of brownish colour and polished surface, weighing 2 ounces.

From a Hindu boy, aged 10 years, who died three days after the operation.

The nucleus is wholly composed of urate of ammonia, as also are the next surrounding laminæ. The peripheral layers contain slight traces of uric acid.

- 32.** A compact hard calculus, of dark brown colour, weighing 120 grains.

Extracted successfully from a Hindu boy, aged five years.

The nucleus is double, of dark colour, and consists of uric acid with traces of urate of ammonia; the surrounding laminæ, on the contrary, are composed chiefly of urate of ammonia, with but traces of uric acid.

- 33.** A flat oval calculus of yellowish-white colour, weighing an ounce.

Removed successfully from Heerah, a Hindu, aged 35.

The nucleus is of dark colour, and chiefly composed of oxalate of lime. The concentric rings are well marked, and are made up of oxalate of lime and urate of ammonia.

- 34.** An oval-shaped calculus, of light yellow colour, weighing 4 drachms.

Successfully extracted from a Hindu boy, eight years of age.

The nucleus and surrounding layers are well marked, and composed of uric acid and urate of ammonia in about equal proportions.

- 35.** An oval flat calculus, of light yellow colour, and granular surface, weighing 150 grains.

From a Hindu boy, aged 10. Operation successful.

The nucleus is not well marked, the whole of the structure is porous, and the stone throughout is composed of uric acid and urate of ammonia.

- 36.** A medium-sized rounded calculus, of light yellow colour externally, weighing 100 grains.

Extracted successfully from a Hindu, named Urjoon, eight years of age.

The nucleus consists of uric acid and urate of ammonia in about equal proportions. The surrounding layers are porous, and entirely composed of urate of ammonia.

- 37.** A medium-sized calculus, soft in texture, and broken during extraction. It weighs 2 drachms. The patient was a Mahomedan, aged 60. He died on the thirteenth day after the operation.

The nucleus and next concentric layers are well defined, the rest is uniformly porous. Every part of the stone is composed of uric acid with traces of urate of ammonia.

- 38.** A slightly tuberculated calculus, of light brown colour, weighing 5 drachms.

Extracted successfully from a Mahomedan, aged 40. Budaon Government Dispensary, 23rd April 1850.

The nucleus is of brownish colour, porous, and consists of uric acid and urate of ammonia in about equal proportions. The succeeding layers, including the thick and whitish crust, have a similar composition.

39. A rounded calculus, of whitish colour externally, and slightly granular surface. It weighs an ounce and a half.

Successfully removed by operation from a Hindu, aged 20.

The nucleus consists of urate of ammonia with slight traces of uric acid; the next coloured rings or layers are well marked, and have a similar composition. The outer thick and white crust is porous and crystalline; is made up of urate of ammonia, triple phosphate, and phosphate of lime.

40. A flat oval-shaped calculus, markedly tuberculated on the surface. It weighs an ounce.

From a Mahomedan, aged 45. Operation successful. The nucleus is large and porous, and entirely composed of urate of ammonia. The surrounding laminae contain urate of ammonia with traces of uric acid; and the tubercles on the surface have a similar chemical composition.

41. A small calculus, of light yellow colour, with white deposits on the surface,—weighing 180 grains. Extracted successfully from a Hindu boy, aged 10. The nucleus is not well defined, and the general structure is porous and white,—not laminated.

Every part is composed of uric acid, with traces of urate of ammonia and oxalate of lime.

42. A moderately large, somewhat heart-shaped calculus, with a slightly tuberculated surface,—weighing $4\frac{1}{2}$ drachms. From a Mahomedan, aged 40. Operation successful.

The nucleus is ill-defined, the general structure porous,—not laminated; it is almost entirely composed of urate of ammonia.

43. A compact oval-shaped calculus, of a dark colour externally, and weighing 270 grains. Successfully removed by operation from a Hindu lad, aged 15.

The nucleus is entirely composed of urate of ammonia, and the surrounding layers, which are well marked, of uric acid and urate of ammonia about equally.

44. A medium-sized oval calculus, of brownish-white colour, weighing 6 drachms.

Removed successfully from a Hindu boy, aged 10 years. The nucleus is chiefly composed of oxalate of lime with traces of urate of ammonia; the succeeding layers, including the crust, of urate of ammonia with a small amount of calcium oxalate.

45. A flat oval calculus, of light brown colour externally, weighing 4 drachms.

Successfully removed by operation from a Hindu lad, aged 14 years.

The nucleus is excentric, and is composed of urate of ammonia variously mixed with oxalate of lime. The surrounding layers are porous, principally consist of urate of ammonia, but contain traces of uric acid and oxalate of lime.

46. A medium-sized oval calculus, weighing 6 drachms. Extracted successfully from Kanciah, a Hindu boy, aged 10 years.

The nucleus consists chiefly of oxalate of lime, variously mixed with lithate of ammonia and lithic acid. The first and second concentric rings have the same chemical composition. The peripheral

layer or crust is made up of lithate of ammonia and lithic acid, with only traces of oxalate of lime.

- 47.** A large irregular-shaped calculus, of a white colour externally, weighing 4 ounces.

Successfully extracted from a Hindu, aged 50. Budaon Government Dispensary, 23rd July 1850.

The nucleus is almost entirely composed of phosphate of lime, with traces of triple phosphate. The internal structure generally is polished, of a white marble-like appearance, has the same chemical composition, but with traces of urate of ammonia.

- 48.** Two calculi,—one large, the other small. Both are of triangular shape, and chalky colour, and together weigh 500 grains.

They were successfully removed by operation (at the same time) from a Hindu, aged 35. Their chemical composition is the same, viz., a nucleus consisting of about equal proportions of lithic acid and lithate of ammonia, and surrounding layers of chiefly lithic acid.

- 49.** An oval calculus, of light yellow colour, weighing 7 drachms.

From a Mahomedan boy, aged 10 years. Operation successful.

The nucleus and surrounding coloured laminae are composed of uric acid and urate of ammonia in about equal proportions. The peripheral layers are white, and, with the crust, made up of urate of ammonia, traces of uric acid, and oxalate of lime.

- 50.** A small, flat, oval calculus, slightly granular on the surface, weighing 50 grains. Extracted successfully from a Hindu, aged 50.

The nucleus is well defined, and consists of urate of ammonia. It is surrounded by dark rings of the same material, but with traces of uric acid. The crust is composed of urate of ammonia and uric acid in about equal proportions.

- 51.** A filbert-shaped rough-surfaced calculus, weighing 65 grains.

From a Hindu boy, aged eight years. Operation successful.

The nucleus is distinct and surrounded by porous layers. They are composed of lithic acid and lithate of ammonia.

- 52.** A large calculus, of light brownish colour externally, and slightly granular on the surface. It weighs 2 ounces $3\frac{1}{2}$ drachms.

Extracted successfully from a Hindu, aged 50. Budaon Government Dispensary, 15th May 1851.

The nucleus consists entirely of urate of ammonia; the next surrounding layer is porous; this, and the succeeding layers, are composed of urate of ammonia mixed in varying proportions with uric acid.

- 53.** A small rounded calculus, of light yellow colour externally, and weighing 130 grains. From a Hindu boy, aged six years. Operation successful.

The nucleus is well marked and of yellowish colour, consists of urate of ammonia with traces of uric acid, and the surrounding rings have a similar chemical composition.

- 54.** A rounded calculus, of light brown colour, weighing 250 grains. Successfully extracted from a Hindu boy, aged five years.

The nucleus is mostly composed of uric acid, but with traces of urate of ammonia and oxalate of lime. The surrounding rings are porous, and consist of urate of ammonia and traces of uric acid.

55. A small oval calculus, of light brown colour, weighing 40 grains. Extracted successfully from a Hindu boy, 10 years of age. The nucleus is excentric, and of a whitish colour. It is surrounded by a dark lamina, to which succeeds porous whitish material, and finally, a hard compact crust of light brown colour. All of them are composed of uric acid with traces of urate of ammonia.

56. A small rounded calculus, of light brown colour externally. It has a little pedicle or attached process, like the stalk of a cherry. Weight, 120 grains.

From a Hindu boy, aged four years, who died seven days after the operation.

The nucleus is soft and porous, consists of urate of ammonia and uric acid in about equal proportions. The surrounding laminae are whiter, but have a similar composition.

57. An oval calculus, of brown colour, markedly tuberculated on the surface, and weighing 110 grains. Extracted successfully from a Hindu boy, seven years of age.

The nucleus is chiefly composed of urate of ammonia with traces of uric acid; the surrounding structure is porous, not laminated, and consists of urate of ammonia and uric acid in about equal proportions.

58. A small rounded calculus, of dark brown colour, and minutely tuberculated at the surface. It weighs 110 grains.

From a Hindu, aged 30. Operation successful.

The nucleus, of dark colour, consists entirely of urate of ammonia; the surrounding layers are uniform and porous, are composed of urate of ammonia with traces of uric acid.

59. A long oval-shaped calculus, of chalky colour externally, and weighing 365 grains.

Extracted successfully from a Hindu boy, eight years of age. The nucleus is somewhat hour-glass-shaped, of dark colour, and composed of uric acid and urate of ammonia. The surrounding layers are white, porous, not laminated, and made up of urate of ammonia and triple phosphate in about equal proportions.

60. A medium-sized oval calculus, of brownish colour, markedly tuberculated at the surface, and weighing 6 drachms. Removed successfully by operation from a Hindu, aged 20.

The nucleus is chiefly composed of oxalate of lime, but with traces of lithate of ammonia; the surrounding rings of lithate of ammonia with traces of calcium oxalate; the crust, of light colour, is again made up of the oxalate with only slight traces of lithate of ammonia.

61. A small mulberry calculus, weighing 240 grains.

Extracted successfully from a Hindu, aged 30. The nucleus is well defined, consists of oxalate of lime with traces of urate of ammonia. The concentric laminae and crust are found composed entirely of oxalate of lime.

62. A large oval calculus, of a brownish colour externally, light-yellow on section. It weighs a little over 6 ounces.

Removed successfully by operation from a Hindu, aged 35. Budaon Government Dispensary, 21st June 1851.

The nucleus is not well marked, is large and porous, consists of uric acid and urate of ammonia in equal proportions. The surrounding layers are hard and compact, have a similar chemical composition.

63. A moderately large, yellowish-coloured calculus, with patches of white deposit on its surface. It weighs 10 drachms.

From a Hindu, aged 50, who died three days after the operation.

The nucleus, of dark colour, is composed of uric acid and urate of ammonia. The surrounding coloured laminae and crust have a similar composition.

64. A small oval calculus, of light brown colour, weighing 120 grains. Removed successfully from a Mahomedan boy, aged 10 years. The nucleus and surrounding layers have the same chemical composition—viz., uric acid with traces of urate of ammonia.

65. A small oval tuberculated calculus, weighing 3 drachms. Successfully removed from a Hindu boy, six years of age. The nucleus is chiefly composed of lithate of ammonia containing traces of calcium oxalate; the next surrounding rings are well marked, and have a similar composition; the "third layer" is ill-defined, and almost wholly composed of calcium oxalate; the crust is white, and, besides the oxalate, contains traces of lithate of ammonia.

66. A large oval calculus, of light yellow colour, tuberculated at the surface. It weighs 14 drachms. Extracted successfully from a Hindu, aged 30. There is no definite nucleus; the stone is homogeneous and porous throughout; it is composed of urate of ammonia and uric acid.

67. An oval-shaped calculus, of brownish colour, weighing 125 grains. Successfully extracted from a Hindu, aged 50. The nucleus is large and somewhat dark. Consists of lithate of ammonia. The crust is whitish on section, and has a similar composition, but with traces of oxalate of lime. The intermediate dark lamina contains oxalate of lime principally, with only traces of lithate of ammonia.

68. A pyriform calculus, of light brown colour externally, minutely granulated on the surface, and weighing 195 grains. From a Hindu, aged 30. Operation successful. The nucleus is porous and excentric, consists of uric acid with traces of urate of ammonia. The surrounding laminae and "base" are whitish, smooth, not laminated; are composed of urate of ammonia with traces of uric acid and calcium phosphate.

69. A rounded flat calculus, of light yellow colour externally, and minutely tuberculated on the surface. It weighs 190 grains. Successfully extracted from a Hindu, aged 35. The nucleus consists of urate of ammonia and uric acid in about equal proportions. The surrounding layers and crust are composed of urate of ammonia with traces of phosphate of lime.

70. A medium-sized calculus, of rounded shape, and "amber" colour, weighing 7 drachms. Successfully extracted from a Hindu lad 15 years of age.

The nucleus consists of lithate of ammonia with traces of lithic acid.

The next surrounding layer is not laminated; those which succeed are markedly so, are of chalky appearance, of similar composition to the nucleus, but with traces of oxalate of lime.

The whitish crust has, in addition, an admixture of lithic acid and phosphate of lime.

71. A large, tuberculated but polished calculus, of a brownish colour, weighing 3 ounces 6 drachms.

Extracted successfully from a Hindu, aged 30, at the Budaon Government Dispensary, 4th August 1851.

The nucleus is white, composed of uric acid with traces of urate of ammonia; the surrounding darker laminæ, which become separated on section, have a similar chemical composition.

72. A small ovoid calculus, minutely tuberculated on the surface, and weighing 40 grains.

Removed successfully from a Hindu boy, three years of age.

The nucleus is distinct and hollow; the surrounding layers well marked; the whole stone consists of lithic acid and lithate of ammonia.

73. A large calculus, of oblong shape, markedly tuberculated on the surface, of light brown colour, and weighing 3 ounces 5 drachms.

Extracted from Harri Ram, a Hindu, aged 35, who died on the eighteenth day after the operation. The nucleus is entirely composed of lithate of ammonia; the next surrounding layer is porous, and, together with the last layer, is composed of equal proportions of lithate of ammonia and lithic acid.

74. A large oval calculus, of chalky colour externally, and weighing 2 ounces 7 drachms.

Removed successfully by operation from a Mahomedan lad, aged 15.

The nucleus consists of uric acid with traces of urate of ammonia; the surrounding coloured layers have the same composition; the crust is made up of phosphate of lime with traces of urate of ammonia.

75. A small oval calculus, of reddish-brown colour externally, weighing 4 drachms.

Extracted successfully from a Hindu, aged 40.

The nucleus is composed of lithate of ammonia and oxalate of lime in equal proportions; the next surrounding lamina, of dark-brown colour, consists entirely of lithate of ammonia; the peripheral layer or crust is chalky, and composed of lithate of ammonia and oxalate of lime.

76. A large calculus, of somewhat triangular shape, and dark-brown colour, with whitish superficial deposits. It is granular but polished, and weighs 2 ounces 6 drachms.

From Mobajeet, a Hindu, aged 50, who died eight days after the operation.

The nucleus is porous, consists of uric acid and urate of ammonia in equal proportions. The surrounding layers are not well defined, and have a similar composition.

77. A medium-sized calculus, a little curved on one side, pointed at one end, of chalky colour, and weighing 4 drachms.

The nucleus and surrounding laminæ are of a light yellow colour, and composed of uric acid and urate of ammonia. The white layer on one side consists entirely of urate of ammonia.

- 78.** A small, rounded, and minutely tuberculated calculus, weighing 60 grains.

Extracted successfully from a Mahomedan, aged 25. The nucleus is porous and entirely composed of urate of ammonia; the surrounding white layer of uric acid and urate of ammonia.

- 79.** A large oval polished calculus, of dark brown colour, and weighing 2 ounces.

Successfully extracted from Bucktee, a Hindu, aged 30, at the Budaon Government Dispensary, 25th August 1851.

The nucleus is of dark colour, and consists entirely of urate of ammonia; the surrounding laminæ are well marked, and have a similar composition; the crust is whitish and made up equally of urate of ammonia and uric acid.

- 80.** Four calculi, each about the size of a pigeon's egg, and twenty-three smaller ones; all with polished, smooth surfaces, and together weighing 7 drachms.

Successfully removed by operation from a Hindu, aged 50.

One of the larger stones has been bisected. The nucleus and surrounding laminæ are well defined, and composed of uric acid with traces of urate of ammonia.

- 81.** A large flat calculus, of a light brownish colour, slightly tuberculated at the circumference only, and weighing 2 ounces.

Extracted successfully from a Hindu, aged 40.

The nucleus is chiefly composed of uric acid with traces of urate of ammonia. The next surrounding layers of the same, but in about equal proportions; and the crust, which is porous, has the same chemical composition.

- 82.** A rounded calculus, of light yellowish colour, minutely granular on the surface, and weighing 330 grains. Successfully extracted from a Mahomedan boy, eight years of age.

The nucleus is distinct; consists entirely of lithate of ammonia; the next surrounding layers have the same composition; the peripheral layer or crust contains, in addition, traces of uric acid.

- 83.** A medium-sized calculus, of somewhat triangular shape, light yellow colour, minutely granular surface, and weighing 110 grains.

From a Hindu boy, aged eight years. Operation successful.

The nucleus is well defined, consists of uric acid and urate of ammonia in about equal proportions. The surrounding laminæ are compact and hard; the crust porous; they are composed of uric acid with slight traces of urate of ammonia.

- 84.** A medium-sized calculus, of oval shape, of chalky colour externally, granular on the surface, and weighing 340 grains.

Successfully extracted from a Hindu boy, aged 12 years.

The nucleus is almost entirely composed of uric acid, but with slight traces of urate of ammonia. The surrounding layers are smooth, uniformly porous, and consist of urate of ammonia with traces of uric acid; the peripheral dark lamina is also composed of uric acid and urate of ammonia.

- 85.** A rounded calculus, of chalky colour, markedly tuberculated on the surface and weighing 6 drachms.
 Extracted successfully from a Mahomedan lad, aged 15.
 The nucleus is composed of lithic acid and lithate of ammonia in about equal proportions, and the concentric rings, which are well marked, have a similar chemical composition.
- 86.** A large oval calculus, of light-brown colour, weighing 14 drachms. Successfully removed by operation from Indur Sing, a Hindu, aged 45. Budaon Government Dispensary, 12th September 1851.
 The nucleus is excentric and porous; is composed of urate of ammonia and uric acid in equal proportions, and contains traces of oxalate of lime. The surrounding layers are porous, and have a similar chemical composition.
- 87.** An oval calculus, of light yellow colour, and weighing 220 grains.
 From a Hindu boy, seven years of age. Operation successful.
 The nucleus consists principally of uric acid with slight traces of urate of ammonia. The surrounding rings are well marked, of light-yellow colour, and composed of uric acid and urate of ammonia in about equal proportions. The crust is of slate-colour, and wholly made up of urate of ammonia.
- 88.** Two calculi of equal size, flat, and oval-shaped. They have a light-brown colour, and together weigh 5 drachms.
 Successfully extracted from a Mahomedan, aged 50.
 The nucleus is slightly excentric, and composed entirely of urate of ammonia. The surrounding laminae, of pale yellowish colour, consist of urate of ammonia with traces of uric acid. The peripheral layer, of whiter appearance, has the same chemical composition.
- 89.** An oval calculus, of light brown colour, with whitish deposits on the surface. It is markedly tuberculated at both ends, and weighs an ounce and a half.
 Extracted successfully from a Hindu, aged 35.
 The nucleus and coloured ring surrounding it are composed of urate of ammonia, with traces of uric acid and oxalate of lime. The succeeding layers are chiefly composed of urate of ammonia.
- 90.** A long oval calculus, a little curved on one side. It is of a white marble-like colour and smoothness externally. With it is a small rounded stone, of the same general appearance. They weigh together 14 drachms.
 Successfully extracted from a Hindu, aged 35.
 The nucleus is excentric, and consists of urate of ammonia with traces of cystic oxide. The chalky portion below the nucleus is composed entirely of phosphate of lime.
- 91.** A large oval calculus, of deep brown colour, with a minutely granulated but polished surface, and weighing 2 ounces.
 From a Hindu lad, aged 16. Operation successful.
 The nucleus consists of urate of ammonia with traces of oxalate of lime. The surrounding laminae are variously composed of the same ingredients.
- 92.** A small rough calculus, weighing 120 grains.

Extracted successfully from a Hindu boy, aged five years.

The nucleus is distinct, and consists of uric acid with traces of urate of ammonia. The surrounding layers are well marked, and have a similar composition. The crust contains uric acid, with traces of phosphate of lime.

- 93.** A small, markedly tuberculated calculus, of yellowish-white colour, and weighing 120 grains.

From a Hindu boy, 10 years of age. Operation successful.

The nucleus is entirely composed of urate of ammonia. The surrounding layers are not well laminated, and consist of urate of ammonia and uric acid in equal proportions.

- 94.** A small, oval, minutely tuberculated calculus, weighing 45 grains.

Successfully removed by operation from a Hindu boy, six years of age.

The nucleus is of a whitish colour, and surrounded by a porous layer ; both are composed of urate of ammonia and uric acid.

- 95.** A small oval calculus, of light-yellow colour, weighing 150 grains.

Extracted successfully from a Hindu boy, eight years of age. The nucleus consists of uric acid and urate of ammonia, and the surrounding layers of uric acid chiefly.

- 96.** A small calculus, of chalky colour, weighing 35 grains.

From a Hindu boy, six years old. Operation successful.

The nucleus is equally composed of uric acid and urate of ammonia ; the surrounding part is porous, exceedingly friable, and consists of urate of ammonia with traces of uric acid.

- 97.** A flat, oval calculus, of light yellow colour, weighing 120 grains.

Extracted successfully from a Hindu, aged 35.

The nucleus is composed of urate of ammonia and uric acid. The surrounding layers are uniform and porous, not laminated. They are composed of uric acid with traces of urate of ammonia.

- 98.** A small calculus, of yellowish-white colour, slightly granular on the surface, and weighing 120 grains.

From Bullah, a Hindu boy, aged eight years. Operation successful.

The nucleus consists of lithic acid and lithate of ammonia in about equal proportions ; the surrounding laminæ are wholly composed of lithate of ammonia.

- 99.** A small, oval, laminated calculus, weighing 120 grains.

Successfully removed by operation from a Hindu boy, 10 years of age.

The nucleus and concentric rings are composed of uric acid and urate of ammonia in about equal proportions.

- 100.** A large oval calculus, a little depressed at the centre, of yellowish colour, and polished surface, weighing $14\frac{1}{2}$ drachms.

Extracted successfully from a Hindu boy, eight years of age. Budaon Government Dispensary, 10th December 1851.

The nucleus consists of urate of ammonia, containing traces of cystic oxide. The surrounding laminæ are well marked, and variously composed of urate of ammonia and uric acid.

- 101.** A small round calculus, of light-brown colour, weighing 40 grains.

Successfully extracted from a Hindu boy, six years of age.

The nucleus is entirely composed of urate of ammonia. The surrounding rings are well marked, have a similar composition, but with traces of uric acid.

102. A small oval calculus, of whitish colour, weighing 150 grains.

Extracted successfully from a Hindu boy, six years of age.

The nucleus is variously composed--of oxalate of lime, urate of ammonia, and uric acid. The surrounding layers are made up of urate of ammonia and uric acid, but contain no oxalate of lime.

103. A small, yellowish-coloured, rough calculus, weighing 100 grains.

Removed successfully by operation from a Hindu boy, aged five years.

The nucleus and surrounding rings are well marked, and composed of urate of ammonia with traces of oxalate of lime.

104. A large oval-shaped calculus, of white colour externally, irregularly tuberculated on the surface, and weighing $10\frac{1}{2}$ drachms. Successfully removed by operation from a Hindu boy, eight years of age.

The nucleus consists almost entirely of lithic acid, but gives slight traces of lithate of ammonia. The surrounding white layer has a similar composition.

105. A small rounded calculus, of amber colour externally, and with a minutely tuberculated surface. It weighs 120 grains. Extracted successfully from a Hindu boy, four years of age. The nucleus consists of urate of ammonia. The surrounding yellowish and darker layers have the same chemical composition.

106. A small oval calculus, of light brown colour; the surface minutely granulated but polished. It weighs 90 grains. Successfully extracted from a Hindu boy, five years of age. The nucleus is distinct and surrounded by a porous layer; both are composed of uric acid with traces of urate of ammonia.

107. A large rough oval calculus, chalky in colour, and polished on its external surface. It weighs $6\frac{1}{2}$ drachms. Successfully removed by operation from a Hindu, aged 35.

The nucleus is of dark colour, and consists of urate of ammonia and uric acid, with traces of phosphate of lime. The succeeding laminae are principally composed of urate of ammonia.

108. A somewhat hour-glass shaped calculus, of chalky colour, and a smaller calculus, of oval shape, and of the same colour, together weighing 2 ounces and 40 grains. Removed successfully by operation from a Hindu, aged 30.

The nucleus consists of urate of ammonia with traces of uric acid. The next concentric layers have a similar composition. The peripheral white layer is porous, and made up of phosphate of lime, triple phosphate, and urate of ammonia variously mixed.

109. A medium-sized rounded calculus, of light brown colour, weighing 3 drachms. From Rajah, a Hindu, aged 50. Operation successful.

The nucleus is composed of oxalate of lime, with traces of lithate of ammonia and lithic acid. The surrounding layers consist of urate of ammonia and uric acid, but no oxalate of lime.

- 110.** An oval flat calculus, of light brown colour, weighing 6 drachms and 20 grains.

Extracted successfully from a Hindu, aged 40.

The nucleus is not defined, the whole stone is porous, and is composed of lithate of ammonia containing traces of oxalate of lime.

- 111.** A small, rough, rounded calculus, weighing 65 grains.

Successfully extracted from a Hindu boy, six years of age.

The nucleus is composed of uric acid and urate of ammonia in about equal proportions. The surrounding rings are porous, not well defined, and have the same chemical composition.

- 112.** An oval-shaped calculus, of light brown colour, weighing 4 drachms 45 grains.

Successfully removed by operation from a Hindu, aged 30.

The nucleus, of dark colour, consists of uric acid, with traces of urate of ammonia and oxalate of lime. The surrounding layers, of light brown colour, consist chiefly of oxalate of lime, with traces of urate of ammonia and uric acid.

- 113.** A medium-sized oval calculus, of a brownish colour, weighing 6 drachms.

Extracted successfully from a Mahomedan lad, aged 12 years.

The nucleus consists of oxalate of lime, and the surrounding layers of lithate of ammonia variously mixed with oxalate of lime.

- 114.** A rounded calculus, of light brown colour, with a polished surface, and weighing one ounce.

Successfully extracted from a Hindu, aged 35.

The nucleus is composed of urate of ammonia with traces of uric acid and oxalate of lime; the next surrounding layer of urate of ammonia with more oxalate of lime and less uric acid than the nucleus; the succeeding layers of urate of ammonia and varying proportions of oxalate of lime; the crust of equal proportions of urate of ammonia and uric acid.

- 115.** A medium-sized oval calculus, of light yellow colour externally, darker on section, and weighing 310 grains.

From Durmah, a Hindu, aged 35. Operation successful.

The nucleus consists of oxalate of lime with traces of urate of ammonia. The surrounding layers are knotted and porous, and composed of urate of ammonia, uric acid, and traces of oxalate of lime.

- 116.** A rounded calculus, of white colour externally, and weighing 390 grains.

From a Hindu, aged 20. Operation successful.

The nucleus is excentric, and composed of uric acid, urate of ammonia, and traces of oxalate of lime. The surrounding laminae consist of urate of ammonia variously mixed with oxalate of lime.

- 117.** A small, flattened, oval-shaped calculus, weighing 2 drachms, with fragments of a second smaller stone,—both successfully removed by one operation from a Hindu boy, aged 12 years.

The larger stone has been preserved entire. The smaller seems to have consisted of a nucleus of uric acid, and a chalky crust of phosphates (fusible).

- 118.** Three calculi, weighing together 225 grains. One is moderately large, the other two are small, and each is invested by a thick

chalky crust, which separates on section, leaving polished smooth stones.

Extracted successfully from a Hindu boy, aged 10 years.

The nuclei are entirely composed of urate of ammonia; the surrounding laminae, which are distinctly marked, of equal proportions of urate of ammonia and uric acid; the external thick crusts contain phosphate of lime in abundance, and also urate of ammonia and uric acid in about equal proportions.

119. An oval, flat, calculus, of a chalky colour externally, brownish on section, and weighing 110 grains.

Successfully extracted from a Hindu, aged 40. The nucleus, of dark colour, is chiefly composed of uric acid, but contains traces of urate of ammonia. The next concentric laminae have a similar composition; and the crust, though chalky in colour, is also similarly composed.

120. An oval calculus, of light yellow colour, and tuberculated on the surface. It weighs 6 drachms.

Removed successfully by operation from a Hindu boy, aged 10 years.

The nucleus is porous, and consists of equal proportions of urate of ammonia and uric acid, and the surrounding layers, also porous, have the same chemical composition.

121. Two small, smooth-surfaced calculi, together weighing 4 drachms.

Successfully extracted from a Hindu, aged 30.

The crust of the smaller stone has been much broken up; that of the larger is only fissured; neither have been divided, but the chemical composition seems to be almost purely uric acid.

122. A rounded calculus, weighing 3 drachms.

Extracted successfully from a Hindu boy, 10 years of age.

The nucleus is composed of urate of ammonia and uric acid. The surrounding structure, not well laminated, has a similar composition, but with a variable admixture of oxalate of lime.

*A series of Calculi presented to the Museum by Dr. Wise, Civil Surgeon, Dacca.**

123. An elongated, oval-shaped calculus of brownish colour, and with a rough tuberculated surface. It weighs 3 ounces $6\frac{1}{2}$ drachms.

From a Bengali, aged 30. Duration 10 years. Result—cured.

The nucleus is small and slate-coloured, consists of oxalate of lime, the surrounding structure of alternating rings of urates and uric acid.

124. A very fine specimen of "mulberry" calculus, weighing 2 ounces 4 drachms and 20 grains.

From a Mahomedan, aged 61. Duration—16 years. Result—"ceased to attend."

The nucleus is large, hard, and oval-shaped. The surrounding layers are more porous. They are composed almost entirely of calcium oxalate. The outer surface is dusted over with minute crystals of triple phosphate.

* Chemically analysed by Dr. C. J. H. Warden, Professor of Chemistry, Medical College, Calcutta.

125. An oval-shaped, rough calculus, having a pinkish tinge on section, and weighing $1\frac{1}{4}$ ounce.

It consists of urates and uric acid in alternating layers.

From a Mahomedan, aged 50. Duration—three years. Result—cured.

126. A large oval calculus and a smaller kidney-shaped one, weighing together 3 ounces 1 drachm 34 grains.

From a Hindu, aged 60. Duration—two years. Result—cured.

It is whitish on the surface, brown and laminated on section. The nucleus consists of uric acid, the surrounding layers of urates and uric acid.

127. An oval calculus, of a brownish-red colour, markedly tuberculated at the surface, and beautifully laminated on section. It weighs 6 drachms.

From a Bengali, aged 48. Duration—four years. Result—cured.

The nucleus is hard and dark, consists of calcic oxalate. The concentric rings are composed of urates and uric acid.

128. A somewhat reniform large calculus, rough and chalky-looking at the surface, and weighing 2 ounces and 3 drachms.

From a Hindu, aged 40. Duration—five years. Result—died.

The nucleus is excentric, and of slaty colour; consists of urate of ammonia. The rest of the stone is soft and porous, and composed of triple phosphate and phosphate of lime (fusible).

129. A very fine specimen of mulberry calculus, of medium size, weighing $5\frac{1}{2}$ drachms.

From Sobha (native male), aged 50. Duration—four years. Result—cured.

Chemical composition—oxalate of lime.

130. A medium-sized oval calculus, with a finely granular surface, and chalky crust. It weighs 6 drachms.

The nucleus and next concentric layers have a pinkish-brown colour, and are composed of urates; the white crust of phosphate of lime; at the surface minute crystals of triple phosphate are deposited in great abundance.

From a Hindu, aged 30. Duration—18 months. Result—cured.

131. A hard, oval calculus, with a rough surface, and of brownish colour. Weight— $7\frac{1}{2}$ drachms.

The nucleus is irregular, consists of calcium oxalate; the rest of the stone of alternating layers of the oxalate and phosphate of lime.

From a Mahomedan boy, aged eight years. Duration—one year. Result—cured.

132. A pyriform calculus, of a chalky colour and consistency, weighing 6 drachms 20 grains.

From a native male, aged 45. Duration—six years. Result—cured.

The nucleus is ill-defined; the next layers slightly laminated; the rest smooth and homogeneous. Chemical composition—phosphate of lime, triple phosphate and phosphate of lime (fusible calculus).

133. An oval-shaped calculus, of brownish yellow colour externally, chalky on section. The surface is irregularly roughened. Weight—6 drachms.

The nucleus is small and irregular, consists of phosphate of lime. The rest of the stone is composed of triple phosphate and

phosphate of lime (fusible). Large crystals of triple phosphate are diffusely scattered over the surface.

From a Mahomedan, aged 41. Duration—5 years. Result—died.

134. An irregularly rounded calculus, with a rough, tuberculated surface, and yellowish colour; weighs a little over 4 drachms.

From a Hindu boy, aged 6 years. Duration—18 months. Result—cured.

Chemical composition—nucleus uric acid; next oxalate of lime; crust uric acid.

135. An oval-shaped, brownish calculus, with a rough surface, and finely laminated structure. Weight— $5\frac{1}{2}$ drachms.

The nucleus has a bluish tinge and hard consistency, is composed of oxalate of lime; the surrounding laminæ of uric acid.

136. Two calculi—one large, irregular shaped, flattened on one side and rough, polished and convex on the other; the smaller stone is flat and polished. They weigh together 5 ounces $2\frac{1}{2}$ drachms. The larger calculus is coarsely and loosely laminated, of a chalky-white colour, and chemically fusible (triple phosphate and phosphate of lime). *No history.*

137. A medium-sized calculus, with a chocolate-coloured and polished surface; weighs 6 drachms.

From a Hindu, aged 20. Duration—10 years. Result—cured.

The nucleus is large, of dark-brown colour, and composed of calcium oxalate; the rest of the stone of uric acid and calcium oxalate in alternating layers.

*A series of Calculi presented to the Museum by Assistant-Surgeon Abinas Chunder Gupta, Pertabgarh.**

138. A rounded calculus, of chalky-colour, and rough surface, weighing $6\frac{1}{2}$ drachms.

The nucleus is not well defined, and the whole structure of the stone is more or less porous. It consists of triple phosphate and phosphate of lime (fusible).

139. A large rounded calculus, with an imperfect chalky crust. It weighs 2 ounces $7\frac{1}{2}$ drachms.

The nucleus is well defined and hard; consists of oxalate of lime. The succeeding layers are smooth, and composed of urates; the peripheral layers are delicately laminated, and composed of oxalate of lime and urate of ammonia in varying proportions.

140. An elongated oval calculus, weighing a little over 6 drachms.

The nucleus is irregular, and composed of uric acid, the rest of the stone of urates.

The central layers are porous, the peripheral hard and compact.

141. A similar shaped calculus, with a porous chalky crust. It weighs $5\frac{1}{2}$ drachms.

The nucleus is not well defined; consists of urate of ammonia; the rest of the stone is fusible.

* Chemically analysed by Dr. C. J. H. Warden, Professor of Chemistry, Medical College, Calcutta.

- 142.** A dumb-bell-shaped highly tuberculated calculus, presenting a coral-like appearance externally, and a beautifully laminated structure on section. It weighs $4\frac{1}{2}$ drachms.

The nucleus is large and porous, is composed of urate of ammonia, the next layer of uric acid, the third of oxalate of lime; the last two substances, in alternate layers, make up the rest of the stone.

- 143.** A medium-sized oval calculus, of chalky-white colour, weighing $4\frac{1}{2}$ drachms.

The nucleus is not well defined; the succeeding layers are delicately laminated; the crust soft and porous. With the exception of the nucleus, composed of "urates," the stone is fusible (triple phosphate and phosphate of lime).

- 144.** A larger but otherwise similar calculus, weighing 7 drachms 20 grains. Nucleus—urates; the rest—fusible.

- 145.** An oval-shaped calculus, minutely tuberculated on the surface, and weighing $3\frac{1}{2}$ drachms. It is almost homogeneous on section,—the nucleus not well marked, and, as well as the surrounding structure, composed of the urates and phosphate of lime in varying proportions.

- 146.** A calculus the size of a pigeon's egg, very dark and finely granular externally, and weighing 4 drachms.

The nucleus is soft and porous; consists of urate of ammonia; the surrounding layers are hard and compact, and consist of uric acid.

- 147.** A somewhat dumb-bell shaped calculus, of chalky colour and consistency, and weighing 158 grains. Chemical composition—entirely fusible.

- 148.** A medium-sized calculus, of oval shape, weighing $5\frac{1}{2}$ drachms.

The nucleus and next concentric laminæ are well defined, and consist of urates and uric acid in about equal proportions. The rest of the structure is homogeneous, white, and fusible.

- 149.** A small flattened calculus, minutely tuberculated on the surface, and weighing 138 grains.

The nucleus is dark and distinct, composed of urates, the rest is chalky and fusible.

- 150.** A moderately large rounded calculus, with a rough surface, and weighing 440 grains.

The nucleus is well defined, consists of urates; the next succeeding layer of uric acid; they are dark-brownish, and finely laminated. The crust is porous, chalky, and fusible (triple phosphate and phosphate of lime).

- 151.** An oval-shaped calculus, of brownish colour at the surface and towards the centre, but white and chalky intermediately. It weighs 330 grains.

The nucleus consists of calcium oxalate, the surrounding layers and crust of triple phosphate and phosphate of lime (fusible).

- 152.** A biconical *fusible* calculus, weighing $4\frac{1}{2}$ drachms.

*A series of Calculi presented to the Museum by Assistant-Surgeon Raj Kissen Mookerjee, Pind Dadan Khan Dispensary.**

153. A large, flat, oval calculus, minutely tuberculated on the surface, and weighing 1 ounce 80 grains; extracted successfully from a man, aged 35. Disease of four years' duration.

The nucleus is large, of a yellowish-brown colour, and consists of the urates of ammonia and lime in about equal proportions, the rest of the stone of phosphate of lime.

154. A large, rough, oval calculus, beautifully laminated, and of brownish-yellow colour on section. It weighs 2 ounces and 20 grains.

Successfully extracted from an old man, aged 60. Duration of disease—5 years.

The nucleus and next surrounding layers are well marked and distinct,—the former consists of calcic oxalate, the latter of uric acid, urate of ammonia, and traces of urate of lime. The crust is composed of phosphate of lime.

155. An oval-shaped rough calculus, weighing 5 drachms.

From a boy, aged 2 years. Duration—6 months. Result—successful.

The nucleus is distinct, and composed of uric acid; the surrounding structure is almost homogeneous, of yellowish-white colour, and consists of uric acid and urate of ammonia in about equal proportions.

156. A large, oval-shaped, yellowish-brown, rough-surfaced calculus, weighing $2\frac{1}{2}$ ounces. From a native male patient, aged 35, "still under treatment." Disease of four years' duration.

The nucleus is distinct, dark coloured, and consists of uric acid. The next surrounding layers are deficiently laminated, porous, and composed of urate of ammonia with traces of urate of lime. The crust is harder, and made up of uric acid.

157. Two large calculi, successfully extracted from a man, aged 20. The disease was of eight years' duration.

The stones have a chalky colour externally, are brownish-yellow on section. They weigh together $6\frac{1}{2}$ drachms.

The nucleus consists of uric acid; the next surrounding layers of the urates of ammonia and lime; the crust has a similar composition, but with a varying admixture of oxalate of lime. "The rectum was wounded in this case, and the man discharged with a fistulous opening," but otherwise cured.

158. A pyriform, rough-surfaced calculus, weighing 1 ounce 5 drachms. Successfully removed by operation from a man, aged 40. Disease of six years' duration.

"The stone was covered, when first extracted, by a thin cobweb-like membrane; and its surface was so very soft that it gave way under the grasp of the forceps."

The nucleus and next surrounding layers have a pinkish or brownish-pink colour, and are composed of urate of ammonia. The crust is porous, of chalky whiteness, and is fusible (triple phosphate and phosphate of lime).

* Chemically analysed by Dr. C. J. H. Warden, Professor of Chemistry, Medical College, Calcutta.

159. A moderately large rounded calculus, with a finely tuberculated surface, weighing 1 ounce $3\frac{1}{2}$ drachms.

From a native boy, aged 10 years. Duration of disease--4 years. Result—"Still under treatment."

The nucleus is distinct and hard; the next layers delicately laminated. They are composed of the urates of ammonia and lime. The peripheral layers are porous, of a yellowish colour, and together with the crust are made up of the phosphate of lime and uric acid in varying proportions.

160. A very large conch-shaped calculus, of an alabaster colour, with the exception of the nucleus, which is dark brown. The structure generally is porous. The nucleus consists of oxalate of lime with traces of uric acid; the rest of the stone of triple phosphate and phosphate of lime (fusible). Large crystals of triple phosphate are visible on the surface, and also throughout the porous outer laminæ of the calculus. Weight 6 ounces.

Donor unknown.

161. A large oval calculus, of chalky-white colour externally, and markedly tuberculated at the surface. It weighs 4 ounces $7\frac{1}{2}$ drachms. The nucleus is double, of light brown colour, and beautifully laminated. It is chiefly composed of uric acid. The peripheral thick white crust is fusible (triple phosphate and phosphate of lime). The same material is interposed between the two nuclei, and completely separates them from each other, so much so, that it seems probable that originally there were two stones, which have become fused, as it were, into one.

Donor unknown.

162. A rough, oval-shaped calculus, of a pale brownish colour, and markedly laminated on section. It weighs 4 ounces 6 drachms.

The nucleus is irregular, consists of uric acid; the next concentric layers of urates of ammonia and lime; the crust of phosphate and oxalate of lime in varying proportions.

Donor unknown.

163. A large, oval, white, coral-like calculus, weighing 1 ounce 6 drachms.

The nucleus and next surrounding ring are well marked; the rest of the stone is porous, not laminated. The nucleus consists of triple phosphate, the rest of the stone of phosphate of lime and triple phosphate (fusible), with also slight traces of uric acid.

Donor unknown.

164. An oval-shaped, chalky-looking calculus, weighing 1 ounce $2\frac{1}{2}$ drachms.

The general structure is porous,—sparingly laminated towards the centre. The nucleus is somewhat excentric, and, as well as the rest of the stone, consists of phosphate of lime, triple phosphate, and traces of uric acid. Large crystals of triple phosphate are diffusely scattered throughout the porous layers of the calculus.

Donor unknown.

165. A large pyriform calculus, weighing 3 ounces 2 drachms.

The nucleus and next surrounding layers have a yellowish-brown colour, and are composed of uric acid. The rest of the stone is chalky, white, and fusible.

Donor unknown.

166. A large rounded calculus, of a chalky-white colour, and soft externally (crust); hard, compact, and dark at the centre. It weighs 3 ounces 1 drachm.

The nucleus consists of oxalate of lime; the next concentric layers of uric acid and calcic oxalate alternately, the thick soft crust is fusible (triple phosphate and phosphate of lime).

Donor unknown.

167. A very large irregular-shaped calculus, curved on one side, and obtusely pointed at one extremity, where it was impacted in the neck of the bladder. It is very markedly tuberculated on the surface, and throughout of a chalky-white colour. Weighs $14\frac{1}{2}$ ounces.

The nucleus is ill-defined; consists of oxalate of lime; the succeeding layers of oxalate of lime with phosphate and carbonate of lime in varying proportions. The peripheral structure (including the crust) is composed of triple phosphate and phosphate of lime. Extracted by the supra-pubic operation from a native male, aged 53. There had been symptoms of stone in the bladder for twelve years.

Presented by Professor W. J. Palmer.

168. A large, flat, oval-shaped calculus, with a finely granular surface, —weighing 2 ounces 2 drachms 8 grains.

Successfully extracted from Shaik Mogul (Mahomedan), aged 32. He had suffered from symptoms of stone in the bladder for nine years.

The nucleus is irregular; consists of oxalate of lime; the rest of the stone of alternating layers of uric acid and calcic oxalate.

Presented by Dr. Vincent Richards, Civil Surgeon, Goalundo.

169. A medium-sized flat calculus, with a smooth surface, weighing 215 grains.

Extracted successfully from Rajnath (Hindu), aged 30. Duration of, disease—4 years.

The nucleus is not well defined consists of the urate of ammonia. The rest of the stone is similarly composed, but contains also traces of urate and phosphate of lime.

Presented by Dr. Vincent Richards, Civil Surgeon, Goalundo.

170. A small, oval, calculus, rough and granular at the surface, and weighing 129 grains.

From Poresli (Bengali), aged 30, who had suffered from the disease for 18 months. Operation successful.

The nucleus is dark; composed of the oxalate of lime; the next concentric ring of uric acid, and the whitish crust of urate of ammonia.

Presented by Dr. Vincent Richards, Civil Surgeon, Goalundo.

171. A large oval calculus, of chalky-white colour at the surface, and weighing 3 ounces 2 drachms.

The nucleus is porous and not well defined, is composed of urates. The rest of the stone is sparingly laminated, and fusible.

Donor unknown.

- 172.** A large, oval calculus, with a rough, pale-brownish surface, weighing 3 ounces 380 grains. Removed, by the operation of lateral lithotomy, from a native of Bhagulpore.

The nucleus consists of uric acid; the first surrounding layers of urate of ammonia; the rest of the stone, which has a generally porous and soft structure, is composed of the urate of ammonia and phosphate of lime in varying proportions.

Presented by Dr. Wright, Civil Surgeon, Bhagulpore.

- 173.** A "mulberry" calculus weighing 300 grains.

The nucleus is composed of phosphate of lime; the rest of the stone, including the crust, of phosphate and oxalate of lime, with traces of xanthine (?).

Donor unknown.

- 174.** A small, flattened calculus, of somewhat triangular shape. It has a brownish, tuberculated, but polished surface, and weighs 160 grains. Removed successfully by operation from a native male patient (adult). Duration of disease—about six months.

The nucleus is large, and composed of uric acid. The surrounding laminae are very hard and dark, and are composed of oxalate of lime.

Presented by Professor W. J. Palmer.

- 175.** A rounded calculus, with a thick chalky crust, a considerable portion of which has been broken during extraction. It weighs 1 ounce 165 grains.

From a native male patient, aged 20. Operation successful.

The nucleus consists of uric acid. The next concentric rings are delicately laminated, and composed of alternating layers of uric acid and calcium oxalate. The thick white crust is made up of phosphate and oxalate of lime.

Presented by Professor W. J. Palmer.

- 176.** A flattened, very much tuberculated calculus, of irregular shape, and weighing 280 grains.

The nucleus is large and round, composed of uric acid; the surrounding structure is more or less homogeneous, consists of uric acid with urate of ammonia, and contains traces of urate of soda and magnesia.

Presented by Professor J. Fayrer.

*A series of Calculi presented to the Museum by Assistant-Surgeon Onoocool Chunder Chatterjee, Durbhunga.**

- 177.** A large, oval calculus, with a markedly tuberculated surface (the crust partially broken), weighing 2 ounces. From a Hindu, aged 54.

The nucleus is ill-defined; consists of uric acid; the next surrounding layers of oxalate of lime. The crust and large white nodules on the surface are composed of phosphate of lime and triple phosphate (fusible).

- 178.** A medium-sized, flattened, and rough calculus of chalky-white colour, weighing 265 grains. From a native male (Hindu), aged 45.

* Chemically analysed by Dr. C. J. H. Warden, Professor of Chemistry, Medical College, Calcutta.

The nucleus is dark, excentric, and composed of oxalate of ammonia.

The surrounding structure is soft and porous, consists of the urate of ammonia and triple phosphate in various proportions.

179. A oval-shaped calculus, rather larger than a sparrow's egg, with a finely granular surface, and weighing 70 grains. From a native (Hindu) boy, six years of age.

The nucleus is dark, composed of calcic oxalate. The surrounding layers and crust are porous and not laminated, and are made up of triple phosphate and urate of ammonia, with traces of phosphate of lime.

180. An entire flattened calculus, with a rough tuberculated surface weighing 100 grains. From a Hindu, aged 60.

The nucleus is composed of urate of ammonia; the surrounding layers of oxalate and phosphate of lime in varying proportions.

181. Two small, rounded, smooth-surfaced calculi, each weighing 75 grains. From a Hindu boy, aged 4 years.

They seem to have the same chemical composition:--the nucleus consists of urate of ammonia, the next concentric laminae of oxalate of lime, and the crust of triple phosphate, with traces of phosphate of lime.

182. Two small calculi,--one the size of a bean, the other of a pea. They have rough, granulated surfaces, and weigh, respectively, 20 and 3 grains. From a native male (Hindu), aged 36. The calculi are composed of urate of ammonia and oxalate of lime in about equal proportions.

A series of Calculi, removed by lateral lithotomy, by the late Surgeon-Major Baillie, Civil Surgeon, Bhagulpore.--Chemically analysed and presented to the Museum by Professor C. J. H. WARDEN.

183. A conical-shaped calculus, with a chalky surface, and weighing 110 grains.

From a native child aged 10 years. Result--cured.

The nucleus consists of oxalate of lime; the next surrounding layers of urates; the crust of calcium phosphate.

184. An elongated, dumbbell-shaped calculus, weighing 280 grains. From a Hindu, aged 24;--Symptoms of stone had existed for 10 years. Result--cured.

The nucleus is pale-brown in colour, and composed of urates; the rest of the structure is fusible (triple phosphate and phosphate of lime).

185. An oval calculus with a pale-brownish crust, partially broken. It weighs 536 grains. Successfully extracted from a native male, aged 25. Duration of symptoms--one year.

The nucleus consists of urates; the next dark lamina of oxalate of lime. This is succeeded by alternating rings of dark and white colour, composed, respectively, of calcium oxalate and phosphate. The peripheral layers are fusible (triple phosphate and phosphate of lime), but the final encrusting substance consists of urates.

186. A large, oval-shaped, rough calculus, weighing 1,265 grains. From a native male, aged 25. Duration of symptoms--12 years. Result--successful.

The nucleus is indistinct, the general structure porous and loosely laminated. The former is composed of urates; the rest of the stone of alternating layers of uric acid and urate of ammonia.

- 187.** A medium-sized oval calculus, with a chalky-white crust, and weighing 390 grains. Successfully extracted from a native boy, aged 7 years. Duration of symptoms—2 years.

The nucleus consists of urates; the surrounding layers of urates and uric acid; the crust of triple phosphate and phosphate of lime (fusible).

- 188.** A oval-shaped tuberculated calculus, weighing 320 grains. From a native child, aged 7 years. Duration of symptoms—one year. Result—successful.

The nucleus is composed of urates; the rest of the stone, except the thin whitish crust, has a dark slate-colour, and is very firm and compact. It consists of oxalate of lime. The crust is formed by a deposit of phosphate of lime.

- 189.** A small oval calculus, weighing 155 grains. Successfully removed from a native child, aged 11 years. Symptoms of stone had existed for six months.

The nucleus is distinct, and composed of urates. The surrounding dark, smooth, non-laminated structure consists of calcic oxalate; the crust of urates.

- 190.** A rough, tuberculated, oval calculus, weighing 502 grains. From a native male, aged 18. Duration of symptoms—6 years. Operation successful.

The nucleus is well defined and composed of urates; the next layers of urates and uric acid in varying proportions. The crust is formed by phosphate of lime.

- 191.** A dark-brownish, remarkably tuberculated calculus, weighing 210 grains. Successfully extracted from a native boy, aged 8 years. Duration of symptoms—nine months.

The nucleus is oval-shaped and distinct; consists of urates. The surrounding laminæ are composed of uric acid and urates in alternation. The crust is fusible.

- 192.** An oval-shaped, rough-surfaced calculus, weighing 503 grains. The patient was "an old man," who died six days after the operation from hæmorrhage. Symptoms of stone had existed for twelve months.

The nucleus is large and distinct, composed of urates, the succeeding structure of concentric alternating rings of uric acid and urates.

- 193.** An irregular-shaped calculus, removed in two pieces from the bladder of a native boy, aged 10 years. The constricted narrow portion was firmly lodged in the neck of the bladder, and broke off from the rest of the stone on the application of the forceps. The patient made a good recovery.

The calculus is of chalky colour externally, pale-brown and laminated on section. The nucleus consists of urates, the remaining structure of alternating rings of triple phosphate and phosphate of lime, and urates. Weight—260 grains.

194. A large, oval calculus, with a soft white crust, but very hard and compact body. It weighs 670 grains.

Successfully extracted from "an old man," who had suffered from symptoms of stone for three years.

The nucleus consists of uric acid; the succeeding laminæ of oxalate of lime and uric acid in varying proportions; the crust is fusible.

195. A very curiously-shaped calculus, weighing 410 grains, removed successfully from "a young man." The lower bi-conical portion was lodged in the neck of the bladder, and broke off, during extraction, from the flattened part of the stone. The former is polished and smooth on its upper aspect, rough elsewhere. The flattened *caput* is everywhere rough and minutely tuberculated. The structure of both portions consists of urates with uric acid, in alternating deposit.

196. A rough, oval-shaped, fawn-coloured calculus, which weighed on extraction 195 grains. From a native boy, aged 6 years. Operation successful.

The nucleus is composed of urates, the next layers of uric acid, the crust of triple phosphate and phosphate of lime (fusible).

197. A calculus, the "size, colour, and shape of a large duck's egg," and weighing 1,265 grains.

Successfully extracted from a native male patient, aged 25, who had suffered from symptoms of stone for fifteen years. The nucleus is eccentric, and apparently composed of a small blood-clot; the succeeding structure is laminated, and consists of urates; the thick, white, and homogeneous crust is formed by triple phosphate and phosphate of lime (fusible).

198. Two irregular-shaped *faceted* calculi, successfully removed from the bladder of an "adult" native. One calculus has a single *facet*, the other two. These are smooth, white, and polished. The two stones lay closely opposed to each other by the larger polished surfaces, one of which is slightly concave, the other correspondingly convex. From the upper and anterior aspect of one calculus a rough process, nearly half an inch in length, projects. This was impacted in the urethra. No third calculus was found. The two removed weighed together 635 grains.

199. A large, flattened calculus, with a thick brownish-white crust, partially broken in removal. It weighs 1,295 grains.

Successfully extracted from a native male patient, aged 30, who is said to have suffered from symptoms of stone for ten years.

The nucleus is oval-shaped, and, with the surrounding laminæ, which are well marked, composed of uric acid. The crust consists of urates.

200. An elongated, oval-shaped calculus, weighing 1 ounce 2½ drachms. From "a very old man," who had suffered from symptoms of stone for five years, and who died from exhaustion, &c., on the seventeenth day after the operation.

The nucleus is small and irregular, composed of oxalate of lime. The next layer has a pale-brownish colour, and consists of urates;

calcic oxalate and urates make up the succeeding laminæ, which are well defined. The crust is porous, white, and fusible.

- 201.** A smooth-surfaced, oval calculus, of a pale-yellowish colour on section, and weighing 271 grains.

Successfully extracted from a native boy, four years of age. Duration of symptoms—three years.

The nucleus is composed of urates, the surrounding concentric rings and crust of uric acid and urates in varying proportions.

- 202.** A very characteristic “mulberry” calculus, having a remarkably tuberculated surface, and weighing 155 grains. No history.

The nucleus is composed of urates, the next and largest layer of oxalate of lime, which is succeeded by a thin crust of urates.

*A series of Calculi presented to the Museum by Dr George A. Watson, removed by operation at the Civil Stations of Shahpore and Goojrat. (Received in 1867.)**

- 203.** A large, oval-shaped, but flattened, calculus, yellowish-brown on the surface and also on section. It weighs 3 ounces 4 drachms and 38 grains.

The nucleus consists of urates, the remaining structure of uric acid and urates in alternating laminæ.

- 204.** An enormous, irregular-shaped calculus, with a rough chalky surface, and weighing 9 ounces 1 drachm. It is firm and compact on section, exhibits no lamination, and no distinct nucleus.

The structure consists of triple phosphate and phosphate of lime (fusible). No history.

- 205.** A large, oval, rough-surfaced calculus, weighing 2 ounces 6½ drachms.

The nucleus and next concentric layers have a pale-brownish colour, and are composed of urates. The crust is thick, white, homogeneous and fusible.

- 206.** A pyriform calculus, weighing 2 ounces 20 grains. The external surface is minutely granular and tuberculated, the structure, as seen on section, is porous, and almost destitute of lamination. The nucleus is small but distinct, consists of uric acid, the rest of the calculus of urates.

- 207.** A somewhat spindle-shaped large calculus, of a reddish-yellow colour and rough surface, weighing 2 ounces 6½ drachms.

The nucleus is distinct, of a slate colour, composed of calcic oxalate. The next layer is porous, and composed of urates. The peripheral structure is compact, laminated, and consists almost entirely of uric acid.

- 208.** A flattened, oval calculus, of brownish-yellow colour, weighing 1 ounce 6 drachms 8 grains.

The nucleus is large, ill-defined, and porous; consists of urates. The remaining structure is firm, compact, delicately laminated, and composed of uric acid.

- 209.** An oval, rough-surfaced calculus, weighing 1 ounce 4½ drachms. The nucleus is brownish in colour, and composed of urates; the

* Chemically analysed by Professor C. J. H. Warden.

next layers are very dark and porous, formed by calcium oxalate. The crust is white, composed of triple phosphate,—large crystals of which are scattered profusely over the surface of the stone.

- 210.** An oval-shaped large calculus, of yellowish-brown colour, and very delicately laminated on section. It weighs 1 ounce 7 drachms 20 grains.

The nucleus consists of urates, the surrounding concentric rings of uric acid and urates in varying proportions.

- 211.** A medium-sized, oval calculus, with a thick, rough, and chalky-white crust. It weighs 1 ounce 1 drachm 10 grains.

The nucleus and succeeding layers have a slate colour, and are composed of uric acid; the porous white crust of triple phosphate and phosphate of lime (fusible).

- 212.** A large reniform calculus, having a dark brown surface, and weighing 1 ounce 6½ drachms.

The nucleus is irregular but distinct, composed of uric acid. The next layers are porous and consist of urates. The crust is compact, hard, and laminated, is composed of uric acid.

- 213.** A large oval calculus, finely granulated at the surface, and of a dark-brown colour. It weighs 1 ounce 6 drachms 10 grains.

The nucleus is porous, composed of urates; the remaining structure, including the crust, is compact and delicately laminated,—consists chiefly of uric acid.

- 214.** A large, somewhat pyriform calculus, with a partly smooth and partly rough surface, weighing 1 ounce 5 drachms 20 grains.

The nucleus is irregular in shape, of a dark slate colour, and composed of oxalate of lime. The next layers are porous, and consist of urate of ammonia. The crust is chiefly formed of triple phosphate and phosphate of lime (fusible).

- 215.** A large, remarkably tuberculated calculus, with a yellowish surface, and weighing 1 ounce 48 grains.

The nucleus is ill-defined, composed of urates; this is succeeded by oxalate of lime, which constitutes the principal or main structure, and in turn receives a thin deposit or crust of urates.

- 216.** A flattened oval calculus, of brownish-yellow colour, weighing 1 ounce 18 grains.

The nucleus is not well marked. The central portions of the stone are porous, the peripheral laminated and compact. The former are chiefly composed of urates, the latter of uric acid.

- 217.** A medium-sized, remarkably tuberculated calculus, having a thin and imperfect whitish crust, and weighing 1 ounce 1 drachm.

The nucleus is well defined, and consists of urates, the surrounding laminae (and greater part of the stone) of oxalate of lime; the crust of triple phosphate and phosphate of lime (fusible).

- 218.** A typical "mulberry" calculus, showing a very characteristically tuberculated surface, and compact structure. It consists of almost pure oxalate of lime, and weighs 6 drachms 15 grains.

- 219.** A medium-sized oval calculus, having a chalky surface, and weighing 6½ drachms. The nucleus is well marked, and consists of uric acid. The succeeding layers are porous, but become compact and homogeneous towards the periphery. They are

chiefly composed of triple phosphate and phosphate of lime (fusible).

- 220.** An oval-shaped, rough-surfaced calculus, of a brownish-yellow colour, and weighing 5 drachms 44 grains.

The nucleus is not well marked, consists of oxalate of lime, the remaining structure (including the crust) of urates, with only a small admixture of calcic oxalate.

- 221.** A rounded, rough-surfaced calculus, weighing 4 drachms 45 grains.

The nucleus is not well defined, and of dark colour,—is composed of oxalate of lime; the surrounding compact structure consists of triple phosphate, with traces of urates.

- 222.** A small oval calculus, of yellowish colour, and markedly laminated on section. It weighs 4 drachms 12 grains.

The nucleus is not well marked, consists of urates, the rest of the stone is composed of uric acid and urates in alternating concentric layers.

- 223.** A cone-shaped calculus,—probably from the neck of the bladder,—weighing 5 drachms.

The nucleus is ill-defined, composed of urates; the next succeeding layers of phosphate of lime with traces of urates; the thick white and soft crust is formed entirely by calcium phosphate.

- 224.** Two calculi,—one very large, flattened, and partially polished; the other, concavo-convex, and with a smooth marble-like surface. They weigh together 9 ounces.

Removed by the bilateral operation from a native male (Hindu) patient, who had suffered from the disease “for nearly 20 years.” He died from peritonitis on the eight day after the operation.

The larger calculus has a well defined nucleus composed of urates; this is succeeded by a thin layer of triple phosphate; a broad deposit of urates is next observed, and, finally, the very large thick crust is made up of triple phosphate and phosphate of lime (fusible). The smaller calculus has the same chemical composition.

Presented by Assistant-Surgeon Jadub Krishto Sen, in charge of the Sudder Dispensary, Fyzabad.

- 225.** An-oval shaped, apparently lithic acid calculus, with a slight phosphatic coating, and weighing 390 grains.

“Extracted from the bladder of a little girl, aged six years.”

Presented by Mr. J. Wadrateck, Civil Surgeon, Dobeira, Jeypore

- 226-231.** A series of vesical calculi.

Presented by Assistant-Surgeon C. E. Raddock.

- 232-238.** A series of vesical calculi.

Presented by Assistant-Surgeon Shama Churn Dey.

- 239-240.** Two large, oval, rough-surfaced vesical calculi.

Presented by Assistant-Surgeon Ramsoonder Ghose.

- 241.** A very large, irregularly rounded and tuberculated calculus.

Presented by Assistant-Surgeon Nilmadub Mookerjee.

- 242-250.** Vesical calculi of varying size and chemical composition.

No history.

Donors unknown.

Urethral Calculi.

251. An elongated, chiefly urethral, calculus, with a flattened knob or head at one extremity, which was lodged in the neck of the bladder. The stem of the calculus occupied the prostatic portion of the urethra, which was much dilated. Weight—195 grains.

Successfully extracted from a native male patient.

Presented by Professor S. B. Partridge.

- 252-253. Two urethral calculi—one elongated, three-fourths of an inch in length, and rough; the other, rather larger than a pea, and smooth. The former weighs 12 grains, the latter $2\frac{1}{2}$ grains. Extracted successfully,—the larger from a native lad, aged 16; the smaller from a child, two years of age.

Presented by Dr. Birch, Civil Surgeon, Hazaribagh.

254. A “mulberry-like” rounded calculus, nearly as large as a betelnut, removed from the urethra. It had probably formed in the prostrate, and, travelling downwards, become impacted in the *fossa navicularis*. It now caused retention of urine, with great œdema of the glans and prepuce, and “was removed (under chloroform) by slitting up the meatus sufficiently to allow of its passage.”

The nucleus consists of urate of ammonia, the remaining structure of phosphate and carbonate of lime. Weight—60 grains. From a native male “out-patient.”

Presented by Dr. E. Lawrie.

255. A urethral calculus, weighing 3 grains, removed from a native male patient, aged 47.

Presented by Professor S. B. Partridge.

256. Urethral calculus, having a dark-brown polished surface, and weighing $28\frac{1}{2}$ grains. “Extracted, with slight incision of the orifice, from the spongy portion of the urethra of Goolam Hosein Mia, a Mahomedan *khalassi*, aged 25.”

Presented by Professor S. B. Partridge.

- 256a. A small calculus, very much resembling in shape and size a date-stone. The surface is rough, and one side deeply grooved. It weighs 14 grains. “Extracted from the urethra of a native female, aged 34.”

No trace of any vegetable substance entering into the composition of the calculus can be detected. The nucleus consists of lithic acid, the crust of mixed phosphates.

Presented by Baboo Kailas Chunder Mookerjee, M.B., Chinsurah.

257. “A prostatic calculus,” weighing 8 grains, removed from the prostate of “an old man,” during the operation of lateral lithotomy (for vesical calculus).

Presented by Dr. Lyons, Rawul Pindi.

258. The prostate gland of an elderly European, who died from dysentery, showing numerous *corpora amylacea*,—some of large size, of a dark-blue or black colour, hard and gritty. The smaller concretions display, under the microscope, a distinctly concentric or laminated structure.

259. A renal calculus, weighing 4 grains, passed *per urethram* by a European (military officer). The patient was suddenly seized

with very severe pain in the left lumbar region. "The possibility of a renal calculus was suspected at the time. A good dose of laudanum with fomentations gave relief in a few hours. About five weeks after the attack this small roughened calculus was passed by the urethra."

Presented by Surgeon-Major R. T. Lyons, Roorkee.

- 260.** Five calculi, removed *post-mortem*, from the kidneys of a native male prisoner, who died in the Banda jail. Four of these calculi are very irregular (dendritic) in shape; of these, three were lodged in the right kidney, and one in the left. The fifth is smooth and rounded, polished over one-half, and lay in a cup-like cavity hollowed out of the largest calculus in the right kidney. Together the calculi weigh a little over $6\frac{1}{2}$ ounces, and are composed of triple phosphate and phosphate of lime (fusible).

Presented by Dr. Ringer, Surgeon, 40th Regiment Native Infantry, Banda.

- 261.** "A bit of slate-pencil, about two inches long, removed by lithotomy from the bladder of an adult Hindu. It is covered with phosphatic deposit, except at the ends, which are rounded off from use, showing that it is not a portion of a longer pencil, broken in the urethra, but must have been of its present size when introduced."

"The patient professed ignorance of how it entered the bladder."—(Colles).

Presented by Dr. Herbert Baillie.

- 262.** A rounded piece of wood, nearly two inches in length, and a third of an inch in thickness, removed from the bladder of a young Rajput woman. It formed the nucleus of a soft calculous mass, consisting of phosphates, as may be seen in the preparation.

Presented by Surgeon-Major DeFabeek.

- 263.** "The gall-bladder of a dysenteric patient, containing numerous calculi, some of which are still *in situ*, others have fallen out." (Colles).

They are about the size of ordinary peas, *faceted*, and chiefly composed of pure white cholesterine.

Presented by Professor Chuckerbutty.

- 264.** A pure cholesterine-calculus, from the gall-bladder of an East Indian female, aged 80, who died of chronic diarrhoea.

It is rather larger than a nutmeg, oval in shape, slightly tuberculated at the surface, and of a brilliant pearly-white structure throughout. Microscopical examination displays large superimposed plates of pure cholesterine.

- 265.** An oval cholesterine calculus, about the size of a hazelnut, obtained from the gall-bladder of a native female, aged 50, who died of chronic dysentery. The gall-bladder was greatly contracted, and, besides this calculus, contained only a few drops of milky, opaque-white secretion. The cystic duct was almost obliterated, the hepatic and choledic ducts were widely dilated.

266. About a dozen gall-stones, varying in size from that of a hazelnut to that of a pea, removed from the gall-bladder of a native male (Hindu), aged 36, who died of hepatic abscess. The calculi, on section, present a central biliary (dark) nucleus, surrounded by brilliant, yellowish-white, concentric laminae of cholesterine.

267. A biliary calculus, the size of a betelnut. It has a central dark pigmentary nucleus, surrounded by a thick pearly-white crust of almost pure cholesterine. Found, with fragments of a second similar concretion, in the gall-bladder of a native female, who died of exhaustion after delivery.

268. Seven gall-stones, varying in size from a pigeon's egg to a pea. They are faceted, and the majority have dark polished surfaces. Their structure consists of an admixture of biliary colouring matter and cholesterine, the former preponderating. No history.

Presented by Dr. J. Balfour.

269. Half-a-dozen biliary calculi, each about the size of a hazelnut, and irregularly rounded, found in the gall-bladder of a native (Mahomedan) male patient, who died from remittent fever.

They are seen, on section, to be composed chiefly of dark biliary pigment, but with an admixture of yellowish-white shiny particles of cholesterine.

270. Three faceted gall-stones, found at the bottom of a sinus, four inches in length, leading from the abdominal wall towards the liver. They are seen to consist principally of biliary colouring matter disposed in concentric laminae. From a Hindu, aged 45.

The patient was admitted with a circumscribed rounded swelling in the right hypochondriac region, which discharged thick hepatic-looking pus, in small quantities, from two fistulous openings on its surface.

About two years previously, the man had been an in-patient at this hospital (Medical College), and was operated upon for what was then believed to be a parietal (abdominal) abscess. He left before the wound healed, and states that it gradually contracted, but has never ceased to discharge, *i.e.*, for two years.

On re-admission, the fistulae were enlarged, and the intervening bridge, of very dense cicatricial-like tissue, freely incised. Two days after, in dressing the wound, something hard and "metallic" was felt with a probe at its deepest part, and by means of a scoop, a faceted gall-stone, the size of a hazelnut, was extracted; two others, of about the same size, were then easily removed. The patient made an excellent recovery, the wound healing readily and completely before he left the hospital. The "parietal" abscess, for which he was operated upon on first admission, evidently *did* communicate with the liver (*i.e.*, gall-bladder).

271. About a dozen biliary calculi, found impacted in the gall-bladder of a native woman, aged 35, who died from acute peritonitis following abortion. Each gall-stone is about the size of a small hazelnut, is faceted, and consists of a central large nucleus of dark colouring matter, with a crust of cholesterine.

272. "Four gall-stones, filling the gall-bladder, which was much contracted" (Colles). No history. One calculus is the size of a sparrow's egg, and its surface tuberculated. The others are pea-like, smooth, and faceted.

Presented by Professor Chuckerbutty.

273. "Several gall-stones, removed from an encysted cavity in the abdominal parietes. They were contained in a pouch, in size and shape resembling the gall-bladder."

"The patient, Mr. C. B. N——, aged 47, of mixed parentage, did well." (Ewart).

Presented by Dr. Herbert Baillie.

274. Half of an intestinal calculus or concretion, extracted from the rectum of a native male,—“adult.” When entire, the calculus was the size of a small hen’s egg. The surface has a dark olive colour. On section, the nucleus is reddish-brown and felt-like; it consists of vegetable fibre in a fine state of subdivision and pigment matter—fœculent or biliary. The surrounding structure is very hard and compact, chiefly composed of oxalate of lime, with a varying admixture of cystine. “No uric acid or phosphates can be detected.”

“The patient came to the Midnapore charitable dispensary complaining of pain along the transverse colon, and obstruction of the bowels. He was treated with large enemata of turpentine and castor-oil, and a strong purgative. Next day he returned, having been copiously purged, but still complaining of great uneasiness and pain at the anus, accompanied by a feeling of weight. A digital examination was made, the calculus detected, and removed by the forefinger and a scoop. The man obtained immediate relief, and was discharged cured. No history could be obtained to throw light on the origin of the mass.”

Presented by Dr. R. G. Matthew, Civil Surgeon, Midnapore.

275. An intestinal concretion, removed by the finger, from the rectum of Chooni Lal, a native boy, aged 10 years, admitted into hospital for obstruction of the bowels, of ten days’ duration. The abdomen was greatly distended and painful. Warm emollient enemata brought away small dry bits of fœcal matter the first day; on the second, fragments of a curious looking, reddish, clay-like material were noticed in the evacuations. An intestinal concretion was suspected, and, on a digital examination of the rectum, a hard solid mass was detected, firmly lodged in the bowel, and occupying the hollow of the sacrum. By a little manipulation it was removed entire, and is seen to be about the size of a small orange. It was coated externally with soft yellow fœculent matter, which, on being washed away, revealed a hard greenish crust of pigment matter, the interior of which was occupied by soft, friable, reddish, clay-like material.

On microscopic examination, this is found to consist almost exclusively of vegetable matter,—the husks of some graminaceous plant. The longitudinal large cells of the testa are distinct, as also the more oval-shaped or hexagonal cells of the deeper coat, filled with reddish-brown colouring matter.

The removal of the concretion was followed by the complete relief of all the symptoms of obstruction, and the boy left the hospital quite cured.

No history of any morbid appetite for indigestible matter could be elicited from the patient or his friends.

276. An intestinal concretion, about the size of a walnut, rounded in outline, but a little flattened on one side,—where it seems to

have adhered or been attached to the mucous membrane of the bowel. The surface is rough, and of a greenish-yellow colour. It weighs about $6\frac{1}{2}$ drachms. On a section being made, the nucleus is seen to be composed of a betelnut (the pigmented vegetable structure of which is confirmed by microscopic examination); the crust is calcareous, very dense and hard, and composed principally of oxalate of lime.

The patient was a native woman, aged 36, a resident of Comillah. She is said to have suffered from "gastric pain" for fourteen years, and latterly, from much epigastric tenderness, and incessant vomiting. She was in the habit of eating baked-clay biscuits—"a practice common amongst native women in these parts, during pregnancy." After being treated for over a week by opium administered internally, blistering and cupping of the abdomen, and emollient enemata, she passed this concretion, and obtained immediate relief from all her distressing symptoms.

Presented by Dr. J. A. Greene, Civil Surgeon, Tipperah,

277. A black metallic pin, a little over an inch in length, found, *post mortem*, imbedded in the substance of the right lobe of the liver, close to the surface, and at about the centre of its upper or anterior aspect.

From an American seaman, aged 33, who died in hospital of acute suppurative nephritis, following chronic inflammation of the urinary bladder.

278. A very remarkable petrification or concretion, consisting of a portion of *lal chittra* (*plumbago rosea*), about six inches in length, covered by a laminated deposit of carbonate and phosphate of lime. It was found encysted in the left iliac fossa of the body of a native female, brought to the dissecting-room; and had, apparently, lain in this situation for a long period. There was much matting together of the pelvic viscera, due to old inflammatory changes, but no evidence of any recent mischief. It is not known what caused the death of the woman.

The stick or stem of *lal chittra* had probably been used for the purpose of procuring abortion, and had been thrust through the posterior cul-de-sac or left lateral wall of the vagina, and had thus gradually made its way into the peritoneal cavity.

Presented by Professor S. B. Partridge.

279. A Meibomian concretion, removed from a dilated and occluded follicle on the under surface of the left superior eyelid of a native male patient. A cystic development had taken place, and, amidst the usual sebaceous contents of the same, this small concretion was found. It is distinctly calcareous, about the size of a split-pea, yellowish-white and rough.

Presented by Professor H. Cayley.

280. A lachrymal concretion, found at the inner canthus of the eye, imbedded in a small cystic growth,—probably the hypertrophied caruncula lachrymalis. The latter was ligatured and excised, and, on opening it, this small concretion was discovered firmly attached to the interior, by its narrowest portion or root. It is of pearly-white colour, and as hard as enamel,—has something of

the shape of a deciduous incisor tooth. From a native male (adult) out-patient.

Presented by Mr. J. R. Wallace, L.R.C.S.E.

- 281.** A diphtheritic tubular cast of the lower half of the trachea, and of the right and left bronchus, from a native boy, aged 10 years.

The patient was admitted into hospital, on the 18th July 1878, with a history of fever and sore-throat, of five days' duration. The soft palate and tonsils were covered by a thick, white, leathery membrane. Tracheotomy was performed the same afternoon, as the breathing became greatly embarrassed, and all other symptoms aggravated. On the morning of the 20th, acute dyspnoea suddenly supervened, apparently from obstruction of the tracheotomy-tube. On its removal, this cast was expelled from the wound during a violent paroxysm of coughing, and the boy was at once relieved.

The cast is about four inches in length, and, except for one or two small rents in its walls, forms a complete hollow mould of the trachea and bronchi. It has a dull white colour, is smooth externally, internally somewhat flocculent;—closely resembles a decolourized fibrinous clot of the heart.

Under the microscope, the structure consists of closely packed very numerous leucocytes, having one, two, or three sharply defined nuclei; red blood-corpuscles; blood colouring-matter; a great many free nuclei (bioplasts); and a few epithelial, degenerated or altered cells. All these are held together by a finely filamentous, granular basis-substance,—evidently fibrin or fibrinous in character. The cast, therefore, consists of solidified crupous exudation-material,—is cellulo-fibrinous not epithelial.

- 282.** A similar preparation. A diphtheritic cast of the lower two inches of the trachea, of the right and left bronchus, and of the primary branches of the right bronchus. It was coughed up “through a tracheotomy-tube, two days after the operation. The child lived for nine days more, and died finally of asthenia (? paralysis of the heart).”

The general and microscopic characters are the same as those of the preceding preparation.

Presented by Dr. George Chambers.

- 283.** Bronchial casts (fibrinous polypi or concretions). They are four in number; each from an inch to an inch and a half in length, and from one-fourth to one-third of an inch in diameter. Coughed up by a European male patient, suffering from so-called *plastic bronchitis*. They exhibit a highly plicated or stratified structure,—delicate, pellucid, more or less homogeneous, flaky, membranous layers overlying each other, and capable of separation with needles. The concretions are solid, and, under the microscope, a finely granular fibrinous basis-substance is seen, in which are imbedded numbers of large and small, round or oval, highly granular epithelial cells, leucocytes, and a few red blood-corpuscles.

- 284.** A calcareous concretion expectorated during a violent fit of coughing—accompanied by slight hæmoptysis—by a European,

Charles Y.—, aged 49, suffering from chronic bronchitis. It is rather larger than a pea, hollowed so as to form a shell; the external surface rough, marked by little pits and (apparently) vascular grooves; and composed chiefly, if not entirely, of carbonate of lime (effervescence taking place when a minute particle is treated with dilute hydrochloric acid). It is evidently a portion of a dried up caseous mass, either in the lung substance, or within a dilated bronchial tube.

285. A piece of thin pointed bamboo, about four inches in length, found in the right pleural cavity of a native male (Hindu), aged 20, who died of (traumatic) empyema. The whole of the lung was almost completely caseified. The piece of bamboo lay close to it, but not encysted,—merely covered by a thin soft blood-clot of recent origin.

The patient, about a year previously, fell from a date-palm, and alighted upon some bamboo-work (fencing), but had no idea that a fragment from the latter had penetrated the chest-wall. He was admitted into hospital with a fistulous opening between the second and third ribs, two inches to the inner side of the axillary border of the right scapula, through which purulent discharge escaped continuously, in small quantities. A counter-opening was made between the fifth and sixth ribs, in the axillary line, and the pleural cavity freely drained. The man, however, died from exhaustion, and the piece of bamboo was only discovered on *post mortem* examination.

286. A preparation exhibiting a section from the skin, subcutaneous cellular tissue, and superficial muscles of the inner side of the right forearm. Deeply imbedded in the muscular substance is a splinter of wood, two inches in length, which had evidently gained entrance through a wound in the skin,—seen to have quite healed,—and is represented by a linear cicatrix (indicated by a bristle in the preparation). The patient, a native male, aged 19, died from traumatic tetanus, on the 11th day of the injury and third day of the disease. He gave a history of having received a blow with a *lathi* on the forearm, but the presence of the splinter was unsuspected during life, and only discovered *post mortem*.

287. A preparation showing a thick-walled fibrous cyst, about the size of a small orange,—removed from the back of the right elbow-joint of a native (Jubbha Thakoor), aged 35. It was occupied by coagulated and altered blood, and, at one part, by a bullet, which can readily be recognized. The cyst-wall is composed of dense white fibrous tissue; is somewhat hour-glass-shaped; and, in the upper and smaller expansion, is the flattened and misshapen bullet, surrounded by decolourised and partially organized blood-clot. The lower portion contained the same material (blood coagulum), imbedded in which two small pieces of lead were found,—evidently detached fragments of the same bullet. The man stated that, 18 years ago, he had been struck by a bullet at the lower part of the back of the right arm, and he showed a well marked cicatrix, about two inches above the cyst

where the missile had entered. It had thus lodged in the subcutaneous tissues at the back of the elbow for this long period, and the cyst, now described, had formed around it. Recently, from some cause unknown, a small abscess had appeared by the side of the cyst; it was opened, and, on probing the part, a hard irregular body was discovered—the impacted bullet. He was thereupon persuaded to have the entire cyst excised.

Presented by Dr. C. D. McReddie, Civil Surgeon, Hurdui (Oudh).

288. A preparation showing the impaction of two conical bullets at the base of the skull, a little to the inner side of the middle lacerated foramen. One bullet has penetrated the skull, and its conical end is seen roughened. The other has followed in the same track, and become flattened against the base of the first.

From John Norman, a European seaman, aged 35, who attempted suicide, by shooting himself through the mouth, with a small pocket-revolver, while being carried in a palki.

The man was admitted into the hospital, quite unconscious, on the 30th July 1878. His face and lips were impregnated with gunpowder, as also the inside of the mouth. There was a small furrow or depression in the hard palate, ending in a minute aperture in the soft palate, through which even a probe could not be passed. There was great difficulty in swallowing. The next day he partially regained consciousness, and could swallow better, but the right side of the body, *i.e.*, right arm and leg, were found to be paralysed (entire loss of motion, and of sensation to slight extent). On the 7th day he became quite conscious, and had very little difficulty in swallowing, but his speech was indistinct—there was loss of articulating power. From the 8th to the 13th day he improved considerably, recovering partially the use of the limbs, and speaking more distinctly. On the 14th day he complained of pain in the head. The left eyeball was noticed to be slightly prominent, and there was marked diplopia; speech became again thick and embarrassed; and loss of power in the right arm and leg were more pronounced. These symptoms gradually increased, the intellect becoming dull, and the paralysis more complete. Two days before his death the paralysis extended to the opposite (left) side of the body. The patient became, slowly, quite insensible, the breathing stertorous, and he died comatose on the 22nd August, 1878, — *on the 23rd day*. The temperature varied from 101°F. to 102°4F.,—rising to 105°F. the day preceding death.

Presented by the Police Surgeon.

289. “A bezoar taken from the stomach of a giraffe in March 1840. The surface is smooth and slightly oval.” It is hollow and felt-like in the interior.

290. A mass of hair, “taken from the stomach of an alligator. The hair of which it is composed is black and thick, like that of the Hindu race.” (Ewart).

291. “A bezoar from the stomach of an alligator.” The mass is fifteen inches in circumference, and chiefly composed of coarse dark hair.

Presented by Mr. Simon Nicholson.

292. A similar hairy concretion, “from the stomach of an alligator.”

293. The bones of the right arm and forearm (human), together with a steel bracelet and other ornaments, “found in the stomach of an alligator.”

APPENDIX A.

CASTS, WAX MODELS, AND PATHOLOGICAL DRAWINGS.

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* The majority presented by Professor D. Stewart.

† Modelled by Mr. Josh. Towne, of Guy's Hospital, London.

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* Drawn and painted by Babu Hurrish Chunder Khan, Museum Draughtsman.

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I.—PLASTER CASTS AND EARTHEN MODELS.

1. A plaster of Paris cast of the anterior aspect of the thorax of a young (adult) European seaman who "stated that, about a year ago, he fell off a ship's yard and fractured ten ribs; that he was for some time in hospital after the accident, and recovered with this deformity."

"The heart was not displaced; the sounds were normal. His lungs were healthy."

The deformity consists of a prominent rounded ridge or projection on the right side of the thorax, extending vertically from a little above the level of the nipple to the costal arch, and in a line with the inner third of the corresponding clavicle. The lower ribs and intercostal spaces, below the right nipple, are abnormally

* Before operation. | † After operation. | ‡ Nœvoid variety.

flattened, and, apparently, approximated; those above the nipple are unusually prominent and expanded.

Presented by Dr. S. C. Mackenzie, Presidency General Hospital.

2. A plaster cast of the stump after Syme's amputation at the ankle-joint, for carious disease of the tarsus, of five months' duration.

"The patient, a Mahomedan (Abdoolla), aged 30, was admitted on the 29th October; operation on 6th November; discharged on 5th January."

Presented by Professor S. B. Partridge.

3. The cast of a stump after Syme's operation. The patient was an East Indian girl, aged 14, who had long suffered from caries of the tarsal and metatarsal bones of the left foot, resulting originally from an injury.

The flaps had united completely by the twelfth day after the operation.

Presented by Professor S. B. Partridge.

4. Angular curvature of the spine. The deformity is well marked, and situated at about the centre of the dorsal region. No history.

5. "Diffused aneurism of the aorta, penetrating the walls of the chest. From a young East Indian (male, adult). The patient left the hospital; result not known."

A smooth rounded swelling is represented, about two inches below the episternal notch, and a little to the left of the median line of the sternum—which seems to have been penetrated.

Presented by Professor Norman Chevers.

6. Aneurism of the ascending aorta, penetrating the chest-wall, and forming a prominent rounded swelling, the size of an orange, close to the right border of the sternum. It occupies the first two intercostal spaces, and projects beneath the soft parts in this situation. No history.
7. Aneurism of the descending portion of the thoracic aorta, pointing between the ribs in the left infra-scapular region posteriorly. From a native male, adult. The sac ruptured into the pleural cavity, and the death of the patient, from hæmorrhage, was sudden and rapid.

Presented by Professor Norman Chevers.

8. 9. Psoriasis palmaris et plantaris. Casts of the right hand and left foot of, apparently, a native adult, representing a very remarkably fissured and thickened condition of the skin,—probably syphilitic psoriasis. No history.
10. A plaster cast of a small portion of skin of a native patient, affected by, apparently, molluscum—*molluscum fibrosum*. One large semi-pendulous tumour, and a great many smaller ones are seen thickly distributed over the surface. No history.
11. A cast of the anterior portion of the thorax of, apparently, a young native lad, exhibiting multiple subcutaneous growths, situated almost symmetrically over the ribs on either side of the sternum, and over the acromial ends of the clavicles. A solitary growth, about the size of half a walnut, occupies the anterior surface of the manubrium, just below the episternal notch, and another larger but flattened tumour is situated a little below

the ensiform cartilage, in the median line. No history recorded. The growths were, probably, ossous or enchondromatous.

12. Elephantiasis scroti et preputii. A bronzed clay model of "elephantoid" thickening of the skin of the scrotum and prepuce in a native.
13. Another cast of the same condition affecting the scrotum and penis of a native, but with the addition of irregularly rounded swellings in the right groin--probably enlarged lymphatic glands, and a large smooth swelling in the left groin, just above Poupart's ligament,--probably a suppurating bubo, or a bubonocoele. No history.
14. Cast of a young native child with hydrocephalus. The posture of the child when sitting, and the manner in which the enlarged and heavy cranium was supported, are well represented. The head has a circumference of 24 inches; measures $13\frac{1}{2}$ inches from the root of the nose to the occiput (antero-posterior diameter), and $11\frac{1}{2}$ inches from one mastoid process to the other, across the vertex.
15. Cast of a female pelvis deformed by rickets. The pubic bones are pressed backwards and flattened, the promontory of the sacrum projects unduly forwards, and the brim is thus much contracted in its conjugate diameter.

The measurements are--

			Antero-posterior.	Transverse.	Oblique.
Brim	...	...	2"	$5\frac{1}{5}$ "	$4\frac{1}{3}$ "
Outlet	...	...	$2\frac{3}{5}$ "	$4\frac{1}{5}$ "	

16. Rickety deformity of the pelvis; measurements--

			Antero-posterior.	Transverse.	Oblique.
Brim	...	...	$1\frac{1}{5}$ "	$4\frac{4}{5}$ "	$4\frac{1}{5}$ "
Outlet	...	...	$1\frac{3}{5}$ "	$4\frac{2}{5}$ "	

17. Greatly deformed pelvis from rickets. The measurements are--

			Antero-posterior.	Transverso.	Oblique.
Brim	...	...	$\frac{9}{10}$ "	$4\frac{3}{5}$ "	$4\frac{1}{2}$ "
Outlet	...	...	$2\frac{3}{5}$ "	4"	

18. Moderate rickety deformity of the pelvis.

The measurements are --

			Antero-posterior.	Transverso.	Oblique.
Brim	...	...	$2\frac{1}{5}$ "	$5\frac{1}{5}$ "	$4\frac{1}{2}$ "
Outlet	...	...	3"	$4\frac{1}{5}$ "	

19. Rickety deformity of the brim of the pelvis, but with an abnormally wide outlet.

Measurements--

			Antero-posterior.	Transverse.	Oblique.
Brim	...	...	$2\frac{3}{5}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "
Outlet	...	...	$4\frac{1}{2}$ "	$5\frac{1}{5}$ "	

20. A clay model of a morbidly contracted pelvis the result of malacosteon. The transverse diameter at the brim is reduced, the rami of the ischium and pubes are abnormally approximated, rendering the pubic angle acute, and greatly diminishing the outlet, which is further narrowed by the projection forwards of the coccyx. The measurements are—

		Antero-posterior.	Transverse.	Oblique.
Brim	...	$3\frac{1}{2}''$	$4\frac{1}{5}''$	$4\frac{1}{10}''$
Outlet	...	$3\frac{3}{5}''$	$2''$	

21. A model of oblique distortion of the pelvis. There appears to be ankylosis of the left sacro-iliac synchondrosis, with defective development of the corresponding half of the sacrum. The pelvis is twisted to the right; the right oblique diameter shortened, the left increased. The exact measurements are—

		Antero-posterior.	Transverse.	Right oblique.	Left oblique.
Brim	...	$4''$	$4''$	$3\frac{3}{10}''$	$5\frac{1}{10}''$
Outlet	...	$4\frac{1}{5}''$	$2\frac{4}{5}''$		

22. Another model of oblique distortion of the pelvis. Measurements—

		Antero-posterior.	Transverse.	Right oblique.	Left oblique.
Brim	...	$2\frac{4}{5}''$	$4\frac{7}{10}''$	$3\frac{7}{10}''$	$4\frac{3}{5}''$
Outlet	...	$4\frac{1}{5}''$	$4\frac{1}{10}''$		

23. Oblique distortion with contraction of the pelvis from a young native female who died in the obstetric wards of the Hospital. She was delivered by cephalotripsy, but died from exhaustion a few hours after. The measurements are—

		Antero-posterior.	Transverse.	Right oblique.	Left oblique.
Brim	...	$3\frac{3}{5}''$	$3\frac{1}{5}''$	$2\frac{4}{5}''$	$4\frac{1}{10}''$
Outlet	...	$3\frac{1}{2}''$	$2\frac{1}{2}''$		

Presented by Professor R. Harvey.

24. "Deformed pelvis from a Hindu female, aged 30. The patient had lateral curvature of the spine (as shown by the last two lumbar vertebræ). The outlet has a cordate appearance" (Colles). This pelvis approximates in build to that of the male. It is characterized by the rotundity of the brim, the depth of the cavity, the unusual concavity of the sacrum, and by the narrowing of the outlet, owing to the contracted angle formed by the pubic arch. The measurements are—

		Antero-posterior.	Transverse.	Oblique.
Brim	...	$4\frac{2}{5}''$	$4\frac{1}{10}''$	$4\frac{1}{5}''$
Cavity	...	$4\frac{3}{5}''$	$3\frac{3}{5}''$	
Outlet	...	$3''$	$2\frac{2}{5}''$	

Presented by Moulvie Tameez Khan, Khan Bahadoor.

25. Model of a kyphotic pelvis. This peculiar deformity is apparently due to backward curvature of the lumbar spine, whereby the promontory of the sacrum is greatly diminished, and the conjugate diameter of the brim proportionately increased. On the other hand, the outlet is diminished by the approximation of the ischial tuberosities, and especially by the abnormal forward curvature of the coccyx. The measurements are--

	Antero-posterior.	Transverse.	Oblique.
Brim	... $4\frac{3}{5}$ "	$5\frac{1}{2}$ "	$5\frac{1}{3}$ "
Outlet	... $2\frac{1}{5}$ "	$3\frac{1}{2}$ "	

II.—WAX MODELS.

1. *Lichen circumscripatus*.--The inner and anterior aspects of the thigh are covered with little reddish or pinkish papules, collected so as to form rounded elevated patches of limited but varying diameter.
The appearance closely resembles that of *tinea circinata*, so common in this country, but which is parasitic in origin.
2. *Prurigo*.--A portion of the arm and forearm showing slightly elevated smaller and larger papules of a dusky pink colour. Numbers of them are represented with minute scabs or dried blood-stains, to indicate, probably, the results of scratchings, intense pruritus being always associated with the disease.
3. *Psoriasis* or *lepra alphoides*.--The back of the arm and forearm with small circumscribed patches of bright pink colour, covered with minute silvery scales; where the latter have dropped off the raw bleeding cutis vera is exposed.
4. *Lepra nigricans*.--Large, scaly, slightly raised patches of a dark brown colour affect the skin on the anterior aspect of the leg, while the scars left by the healing of such patches may be observed just below the knee-joint. A form of psoriasis or lepra met with in individuals with weakly or broken-down constitutions, or the subjects of strumous or syphilitic cachexia.
5. *Psoriasis labialis*.--A cracked and fissured appearance of the lips, especially at the angles of the mouth, is represented, with small furfuraceous scales at their margins, and over the intermediate inflamed and swollen skin.
6. *Psoriasis chronica vel inveterata*.--On the dorsum of the wrist and hand there are patches of greatly fissured and thickened cuticle. The fissures in several places, *e. g.*, over the knuckles, are deep-red and raw-looking. The unaffected skin is abnormally hyperæmic and injected.
7. *Rubeola* (measles).--The chest and abdomen of a child are represented, covered with the characteristic dusky-red, slightly raised eruption, assuming a more or less crescentic or serpiginous outline, enclosing small spaces of skin which have a normal appearance and colour.
8. *Urticaria*.--Small and large raised wheals or phomphi are seen, --rounded, oval, or irregular in outline, of whitish colour, and surrounded by hyperæmic zones of congested, bright-red skin.

9. *Erythema nodosum*.—Raised circumscribed patches of bright-red colour are observed over the skin on the anterior aspect of the leg. The largest, over the shin, is oval in shape, four inches in length by three in breadth,—the long diameter parallel to that of the limb. At the margins of the patches the colour is not so bright, has a yellowish tinge, and fades away into the natural hue of the unaffected skin—like a bruise.
10. *Erysipelas*.—The whole of the face, and particularly the left side, including the ear, is affected. The skin presents a very bright-red colour, is swollen, glazed, and puffy. Over the upper lip, at the margins of the nostrils, blebs have formed and burst, leaving a yellowish purulent exudation.
11. *Varicella* (chicken-pox).—The right lower limb of an infant, with scattered, small, transparent vesicles. (An old preparation, and not good).
12. *Purpura*.—Small points, patches, and larger bruise-like discolourations of the skin of the thigh and leg are represented. They have a pinkish, purplish, or bluish colour, and are all the result of limited blood-extravasations into the structure of the cutis vera.
13. *Abdominal typhus*, or *typhoid spots*.—Rose-coloured, slightly raised, soft, circular spots are observed, either discrete, or in small groups of three or four, over the skin of the abdomen. They make their appearance between the 8th and 12th day of the fever, remain for three or four days and then fade away, but only to be succeeded by a fresh crop of similar spots, which follow the same course.
14. *Maculæ* or minute points or spots of skin-staining and discolouration,—commonly met with in the course of many of the eruptive fevers.
15. *Variola* (small-pox). The appearance of the eruption on the third day of the fever. Scattered over a child's face are numerous bright-red, hard, acuminate points, the size of hemp-seed, with rosy efflorescence of the adjacent and surrounding skin.
16. *Variola discreta*.—The appearance of the eruption on the hand and forearm of an adult, on the 4th or 5th day of the disease. Prominent, "shotty," large, mostly separate and distinct papules are observed, and others transforming into vesicles; both varieties of eruption being surrounded by bright-red rings of congestion, and a general erythematous condition of the cuticular surface prevailing.
17. 18. *Variola confluens*.—Two specimens of the disease, on or about the 5th and 7th days respectively. The vesicles in the one case, and the pustules in the other, have run together, and form large, prominent, semi-transparent or opaque, yellowish blebs, which thickly cover the entire skin of the hand and forearm.
19. *Variola confluens*, 9th day.—Complete maturation, with subsidence of the pustules; dusky-red discolouration of, and in parts hæmorrhage from, the intervening highly congested and inflamed skin.

20. *Vaccinia*.—The arm of a child on the third day after vaccination. A red line or scratch is seen at the site of puncture, which is slightly raised, tumid, and of a pale-pinkish colour.
21. *Vaccinia*.—Characteristic appearance of successful vaccination on the 8th day (fifth of eruption). A prominent umbilicated vesicle is observed; the surrounding skin is raised, slightly indurated, and of a bright-red colour (the areola), fading gradually, at the margins, into the natural tint of the healthy skin.
22. *Vaccinia*.—Appearance from about the 15th to the 18th day. Hard, dry, dark, and withered scabs now cover the sites of puncture and eruption. The areolæ have disappeared, all signs of cuticular inflammation have subsided. The crusts are about to separate, and leave indelible cicatrices.
23. *Herpes iris*.—The skin of the arm and forearm exhibit circular hyperæmic patches of a dusky-red colour. At the centre of each patch is a large vesicle or bulla, which is surrounded by concentric rings of smaller vesicles, filled with clear transparent fluid.
24. *Herpes zoster* or *zona* (shingles).—The eruption affects a limited space on the right side of the abdomen. Upon a bright-pink erythematous skin, a crop of small, transparent vesicles, or larger and slightly opaque bullæ, are observed, which form a kind of transverse belt or band, and are strictly limited to the area of distribution of the cutaneous nerves in this situation.
25. *Herpes circinatus*.—Circinate vesicular patches of varying size, affecting the skin of the shoulder and arm. With these are small, scattered, separate vesicles, distributed over the course of the internal cutaneous nerves, in the long axis of the limb.
26. *Miliaria* (sudamina).—The skin of the thorax, neck, and axilla is represented covered by innumerable small transparent vesicles. These make their appearance in a variety of diseases in which profuse sweating occurs, and, very rarely, constitute a specific febrile affection,—termed miliary fever.
27. *Eczema simplex* (vel solare).—Very numerous semi-transparent vesicles and a few larger bullæ are observed thickly distributed over the dorsum of the wrist and hand, the unaffected skin being slightly erythematous.
28. *Eczema rubrum*.—The skin of the neck, back, and chest is highly inflamed, excoriated, of a raw red colour, and covered with large, thick, yellowish-brown crusts. Where these have fallen off, the part is glazed and moist from the copiousness of the discharge which is always associated with this variety of the disease.
29. *Eczema genitale*.—The skin of the lower part of the abdomen, of the inner sides of the thighs, and of the scrotum and root of the penis, is red and raw-looking, but is also covered with large, thin, dry scales, and variously fissured and excoriated.
30. *Eczema chronicum*.—Chronic eczema of the skin of the leg. Very large brownish scabs or scales are seen over the skin, and where these have partially separated, the cuticular surface has a dull-red, moist appearance. On the inner side of the leg, and over the skin of the knee-joint, there are large irregular patches of dark discolouration, indicating the site of healed eczematous

crusts, while, here and there, scattered large vesicles represent the initiatory stage of a fresh eruption.

31. *Eczema impetiginodes*.—A form of eczema occurring in debilitated subjects, especially children. The crusts are thick and yellowish-brown; a large patch is observed over each cheek, and smaller ones over the left eyebrow and tip of the nose. Isolated scattered pustules are plentifully distributed over the rest of the face. The predominance of the pustular element in the early vesicles, in the discharge, and in the ultimate crusts, is the special and distinctive peculiarity of this variety of eczema.
32. *Impetigo*.—An old and not good specimen. The disease is represented affecting the skin of the dorsum of the hand and fingers. Large glazed excoriations and fissures are observed, with thin brownish crusts and scales, and, over the wrist, a small group of opaque pustular eruptions.
33. *Impetigo contagiosa vel favosa*.—Thick, more or less rounded, and in parts, quite isolated crusts, having a granular and peculiarly gummy appearance, are seen loosely covering patches of hyperæmic and raw-looking skin over the forehead, cheeks, chin, and nose of a child. An isolated pustule on the right cheek represents the earliest stage of this variety of impetigo.
34. *Ecthyma (cachecticum)*.—A pustular eruption affecting the skin of the face. The pustules are prominent and isolated, or are represented as drying up to form small brownish crusts.
35. *Lupus erythematodes*.—The skin of the cheeks and nose presents a deep-red colour, and shiny appearance, without sensible elevation. Thin adherent scales cover the affected portions. The patch is of large size, and irregular or serpiginous in outline. A smaller patch, in parts slightly tuberculated, is observed over the forehead. The margins of the patches are highly vascular, and exhibit numerous small blood-extravasations or ecchymoses.
36. *Elephantiasis Græcorum (tuberculata)*.—The face of a man affected with true tubercular leprosy. The tubercles are of large size, are isolated or in groups, have a dusky-red or brownish colour, and affect chiefly the skin of the forehead, nose, lips, and chin.
37. *Elephantiasis Arabum (Buenemia tropica)*.—The “elephant” foot and leg of the tropics. The enormously thickened and tuberculated condition of the skin, especially over the dorsum of the foot and toes, is well represented. A large, raw, unhealthy ulcer is shown on the anterior aspect of the leg, a little above the ankle-joint.
38. *Sycosis (follicular)*.—The non-parasitic form of follicular inflammation affecting the skin of the lips and chin. Large tuberculated swellings are observed, with numerous stunted diseased hair-shafts piercing them in various directions. The swellings have a brownish or yellowish-brown colour, and some of them are glazed and shiny.
39. 40. *Scabies*.—Two specimens. In one the left foot of an infant, in the other the left hand of an adult, are exhibited, with the

papular or vesicular eruption produced by the irritation of the skin, in consequence of the presence of the acarus (*A. scabiei*). These are best marked, in the second specimen, on the back of the wrists, and in the fissures between the fingers.

41. Scabies purulenta.—The back of the hand and the thin skin between the fingers are seen covered with a characteristic vesicular and also pustular eruption, from some of which a sero-sanguineous discharge is exuding, and there is a good deal of erythematous redness of the surrounding skin.
42. Favus (*tinea favosa*).—The scalp of a child is covered with numerous, rounded, yellowish, cup-shaped crusts, having thickened raised margins, and depressed centres. Each scab or crust is more or less isolated and distinct; several are pierced by diseased hair-shafts; and a sticky, gummy discharge is seen matting together the unaffected hair surrounding the favi. A few small scattered crusts are observed on the back of the neck and right shoulder. The disease is due to the invasion of the hair follicles and epidermal epithelium by a specific fungus,—the *Achorion Schonleinii*.
43. Lichen syphiliticum.—Dark points or papules are observed, situated in groups over the skin of the arm and forearm; some of them have become almost pustular, others are covered with small dry brownish scales. The affected skin has a dull-red colour, and there are numerous maculæ or pigmentary stainings interspersed among the papular elevations.
44. Psoriasis palmaris.—There is bright erythematous redness of the skin, with numerous dry fissures and cracks, and brownish scales. Towards the centre of the palm, the latter (scales) are thin, delicate, and shiny. The disease is almost invariably syphilitic.
45. Lepra syphilitica.—Small isolated patches, having a distinctly coppery tinge, and covered with thin, gray, shiny, epithelial scales, are seen over the arm and forearm. The majority of the patches have a whitish circumferential line, due to the elevation and detachment of the cuticle.
46. Syphilitic maculæ.—Dark, copper-coloured, pigmentary stainings of isolated and circumscribed character, affecting the skin of the arm and forearm. These frequently succeed sealy and other specific eruptions, and are often very persistent.
47. Rupia (*syphilitica*).—On the right side of the nose, on the forehead, and over the left cheek characteristic “oyster-shell,” stratified crusts are observed. Two of these are large and prominent (*R. prominens*); the others are smaller and flattened (*R. simplex*). They have a brownish-red colour, and, at their margins, the subjacent skin is seen to be inflamed and highly vascular.
48. Syphilitic eethyma.—The skin of the arm and forearm is covered with scattered dark pustules, having a coppery base. With these are numerous dark-brown crusts with thickened raised margins, and flattened centres, or are prominent, imbricated, and rupial-like.

49. *Ecthyma syphiliticum* affecting a hairless scalp. Scattered pustular elevations and unhealthy-looking ulcers are observed. The latter are sharply defined, have coppery-coloured bases, and are covered with a sero-purulent discharge, which, in some instances, has dried to form gummy yellowish crusts.
50. Congenital syphilis.—The skin of the soles of the feet, of the buttocks, and especially of the peri-anal region of a young infant, exhibits a reddish erythematous appearance. There are thin scaly patches and excoriations over the nates, and dry fissures at the inner sides of the thighs. Scattered brownish maculæ, smooth or slightly scaly, are observed over the back.
51. *Scirrhus carcinoma* of the mamma.—The nodulated and indurated appearance of the gland is shown, with retraction of the nipple, and lateral extension of the morbid growth into the right axilla.
52. Fungating carcinoma of the female breast.—Ulceration of the skin over a large space has taken place, with protrusion of exuberant highly vascular cancerous nodules. The whole of the mamma is affected, and secondary lymphatic indurations are represented in the left axilla and above the clavicle.
53. *Scirrhus cancer* of the male breast.—The gland is enlarged and indurated. It is surrounded by flattened nodules of morbid growth, and the skin generally has a dusky-red appearance, with much injection, in patches, of the superficial capillary vessels.
54. *Fungus hæmatodes* (enkephaloid cancer) of the left orbit.—The whole of the eyeball has been destroyed; the eyelids and adjacent soft parts have ulcerated, and, through them, a highly vascular fungoid growth protrudes, which presents, as an irregularly rounded mass, the size of a small orange.
55. Enkephaloid carcinoma of the left orbit.—The eyeball has been destroyed; the eyelids have ulcerated and sloughed; a large irregular-outlined ulcer, with indurated and eroded margins, occupies their place. The morbid growth is extending in various directions;—it infiltrates the soft parts of the cheek; forms a rounded prominent swelling at the outer angle of the orbit; soft, smooth, nodular excrescences beneath the skin of the forehead; and has made its way into the nares and opposite orbit, causing protrusion of the right eyeball, and destructive inflammation of the structures of the globe.
56. Carcinoma of the eyeball.—A longitudinal section, showing the pale-pinkish, soft-looking, brain-like appearance of the morbid growth distending the sclerotic, and pressing upon and producing gradual destruction of all the other structures of the globe.
57. Melanotic sarcoma or carcinoma of the left orbit.—A dark fungoid protrusion of the eyeball and surrounding structures is represented. The eyelids are greatly stretched and thickened, but are not ulcerated, and still enclose the protruding mass. Swelling, induration, and dusky-red discolouration of the left parotid gland coexists.
58. A vertical section of an eyeball affected by melanotic sarcoma or carcinoma, showing the origin of the morbid growth from the

sheath of the optic nerve and posterior part of the sclerotic coat ; its softly lobulated and dark pigmentary structure ; and the complete destruction of the contents of the globe of the eye.

59. A malignant growth—probably sarcoma—affecting the right orbit and the nostrils, forming a huge, lobulated, subcutaneous tumour, and producing hideous deformity of the face.
60. Malignant ulceration of the face (epithelioma).—The right half of the face and a portion of the neck are seen involved. The margins of the ulcer are prominent, irregular, indurated, and eroded. The surface exhibits numerous highly vascular nodules and excrescences of fungoid character. At the upper part, just below the orbit, there is a large bloody eschar ; and the surrounding unaffected skin presents a dusk-red or purplish colour.
61. Malignant (epitheliomatous) ulcer of the dorsum of the hand. It involves the skin and subcutaneous soft parts down to the bones ; is deeply excavated in parts, in others fungoid looking ; the margins are greatly thickened, eroded and vascular. The surrounding unaffected skin shows dusky-red discolouration.
62. A prominent, fungoid, and highly vascular growth, affecting the skin and soft parts on the front of the leg,—probably epithelioma.
63. A hard horny growth, flattened and curved towards its distal extremity, developing from the skin at the back of the forearm, a little above the wrist-joint.
64. Carcinoma of the pylorus.—A series of irregular, indurated nodules are represented, surrounding the pyloric orifice of the stomach, and greatly constricting its channel. The mucous membrane covering them is highly vascular and injected. Two nodules have been incised to show the greyish-yellow appearance of the morbid growth.
65. Gastric ulcer.—At the lesser curvature of the stomach, near the pylorus, a circumscribed sharply defined ulcer is seen, about the size of a four-anna piece (six-pence). The margin is abrupt and smooth ; the surface has an ash-grey colour (sloughy). The general mucous membrane of the organ is thickened, swollen, and intensely vascular.
66. 67. Two specimens of the stomach after poisoning by arsenic. The mucous membrane is seen to be highly corrugated, inflamed, and exceedingly vascular. Dark purplish ecchymoses, and small superficial ulcerations may also be observed in parts.
68. The stomach after poisoning by oxalic acid.—The mucous membrane has been completely removed from a large portion of the inner surface of the organ, below the lesser curvature. The sub-mucous coat is exposed, and presents very numerous, large, dark, ramifying, dilated, capillary vessels, and patches of purplish ecchymosis and blood-extravasation.
69. Anthrax or Carbuncle.—A large but circumscribed and indurated swelling is represented, having a dark or dusky-red colour towards the centre, which shades off into the surrounding healthy skin at the circumference. The skin over the swelling has a glazed or “brawny” appearance ; is seen perforated at several

points by small openings, through which whitish "eores" are visible; while, at the centre, it has given way over a larger space, through which thick sloughs of the cellular tissue are protruding, and a sanious and purulent discharge.

70. Anthrax or Carbuncle, after crucial incision. The enormous inflammatory thickening of the subcutaneous cellular tissue, its excessive vascularity, and infiltration with pus, are all well seen in this model.
71. Dry gangrene affecting the left hand and wrist.—The shrivelled, mummified, and darkly discoloured condition of the diseased parts is remarkably well displayed, as also the circle of ulceration—"line of demarcation"—between the living and dead tissues.
72. Phagedænic ulceration of the forearm.—Two large, and several smaller ulcers are shown, with irregular but abrupt margins, and deeply excavated sloughy surfaces (probably syphilitic).
73. Erysipelatous ulceration of the dorsum of the hand, said to be the result of "glanders."—An oval-shaped ulcer is observed, with hard, irregular, dark-purplish margins, and a sloughy tuberculated surface.
74. A wax model illustrating the appearance of varicose veins in the leg, and the presence of several indolent (varicose) ulcers, a little above the ankle-joint. The whole limb presents dusky livid discolouration of the skin.
75. A wax model described as illustrating "melanosis of the leg."
76. Cirrhotic or "hob-nail" liver.—The shrunken and contracted condition of the organ, and its remarkably tuberculated and nodulated surface, are very well represented.
77. "Large white kidney" of Bright—tubular nephritis. The hypertrophied condition of the organ, its smooth surface, and pale-pinkish colour are readily recognisable. The capsule is represented as being partially peeled off, and as separating easily.
78. A series (twelve) of small wax models, in a separate case, illustrating various conditions of the os and cervix uteri, *e.g.*, hypertrophy, warty growths, follicular inflammation, malignant ulceration, &c.
79. 80. 81. Three wax models of the "lactating" female breast at the sixth, seventh, and ninth months, respectively, of uterogestation or pregnancy. The comparative enlargement, plumpness, and vascularity of the mamma at these periods is intended to be represented, as also the dark discolouration of the areola round the nipple, the prominence of the superficial veins, turgescence of the nipple, and other characteristic signs.
82. 83. 84. Three wax models intended to illustrate the relative size, colour, position and other characteristics of the lungs of the foetus (*a*) prior to respiration, (*b*) when respiration has commenced, and (*c*) when respiration has been fully established.

III.—PATHOLOGICAL DRAWINGS.

1. Osteomyelitis of the humerus, a vertical section of the bone.—The medullary canal is seen to be acutely inflamed, and, as well as the

cancellous tissue of the head of the bone, presents a bright cherry-red colour. From a Mahomedan male, who died in hospital.

(See further, *Surgical Post-mortem Records*, vol. I, 1877, pp. 402-3).

2. Osteomyelitis of the upper half of the left femur, following amputation of the thigh for compound fracture.—There is denudation of the bone, from loss of periosteum, for about two inches above the level of the stump, and a highly vascular, inflamed, and putrid condition of the medulla and cancellous tissue of the head and trochanters.

Case of a native male, aged 30.

(See further, Series II, prep. No. 118, p. 67).

3. Spontaneous dislocation backwards and outwards of the leg (tibia) from the thigh (femur), the result of chronic disease and disorganization of the right knee-joint.—Case of a hospital patient (native male), aged 40. (See further, No. 51, Series III, p. 94.)
4. Melanotic (enkephaloid) earcinoma of a rib.—Nodular, dark, pigmentary deposits are seen, with spontaneous fracture of the bone at these spots. From an East Indian (male), aged 44. (See also Series II, prep. No. 62, p. 58.)
5. Rieky distortion of the spine and thorax.
6. The hand of a middle-aged European (male) showing very characteristic gouty distortion of the fingers.
7. Pseudo-hypertrophic paralysis (Duchenne's) of the flexors of the forearms and legs. There is also a marked curvature of the spine, from atrophy of the erector muscles. Case of a native (Hindu) boy, aged 12, an in-patient.
8. Acute pericarditis (early stage).—The vividly injected and highly vascular condition of both parietal and visceral layers of the pericardium are well represented, and the presence of yellowish lymph deposit on the surface of the heart.
9. Acute endocarditis.—Stenosis of the mitral orifice by recent warty vegetations. *Ante mortem*, fibrinous, hollow or solid growths (thrombi) in the right auricle.
10. Acute ulcerative endocarditis and myocarditis; perforation of the left coronary valve, &c. From a native male, aged 26. (See prep. No. 37, Series VI, p. 121).
11. Warty vegetations of the pulmonary and tricuspid valves.—From a native female, aged 24, who died in hospital. (See *Medical Post-mortem Records*, vol. I, 1875, pp. 859-60.)
12. Inflammatory (atheromatous) thickening, fissuring, and rupture of the aortic valves.—From a native male, aged 35.
13. Great thickening, crumpling, irregularity, and partial cohesion of the coronary valves (aortic insufficiency). There is slight atheroma of the aorta, and dilatation of the left ventricle. Case of John Hopkins, an African seaman, aged 57. (See further, *Medical Post-mortem Records*, vol. II, 1877, pp. 369-70.)
14. 15. Chronic endocarditis of the right side of the heart, and extensive disease of the pulmonary artery—(two plates, showing, respectively, the anterior and posterior views of the lesions). From a Hindu, aged 38, who died in hospital. (See further, prep. No. 226, Series VI, p. 163.)

16. 17. Aneurism of the mitral valve.—Two plates, A and B, showing, respectively, the appearance of the little pouch from the ventricular and from the auricular aspects.

(See further, prep. No. 129, Series VI, p. 143.)

18. The left ventricle of the heart, showing the rupture of a hollow growth or aneurism of the middle flap of the aortic (coronary) valves.

19. An enormous decolourised and partially organised *ante mortem* fibrinous clot or cardiac polypus, firmly adherent to the wall of the right auricle, and depending into its cavity.

(For description and microscopic structure, see prep. No. 137, Series VI, p. 145.)

20. An *ante mortem* globular thrombus, the size of an English plum. It is attached to the apex of the right ventricle, and to the posterior and inferior flaps of the tricuspid valve. At one spot it has ruptured, displaying its hollow structure. From a native male, aged 38, who died of pneumonia.

(See prep. No. 147, Series VI, page 147.)

21. A very large globular thrombus, or dendritic, *ante mortem*, fibrinous vegetation, attached firmly to that portion of the auricular wall which lies between the superior and inferior caval openings. It is the size of a hen's egg. The upper part is rounded and smooth where it has projected into the appendix auriculæ; the lower part is broader, and, in this situation, the thrombus was found to have softened and given way, discharging its yellowish-white creamy contents into the auricle and ventricle. From a native male, aged 40, who died of cirrhosis of the liver, &c.

(See prep. No. 148, Series VI, page 147.)

22. Congenital perforation of the septum ventriculorum,—Prep. No. 152, Series VI, page 148. From a native woman, aged 20, who died of pneumonia after child-birth.

23. Congenitally malformed and hypertrophied heart.—The aorta and pulmonary artery both originate in the *right* ventricle; the septum ventriculorum is perforated; the left auricle is rudimentary, &c. For full description, see prep. No. 153, Series VI, page 149.

From a Hindu female, aged 18, who died in hospital.

24. Congenital fenestration of the aortic and pulmonary valves,—a series of nineteen separate drawings from different subjects.

25. Acute endo-arteritis (syphilitic).—The lining membrane of the aorta, just above the coronary valves, presents irregular, pale-pinkish thickening, which, in the fresh state, was moderately soft or gelatinous, and confined entirely to the inner fenestrated coat. From a native male, aged 25, who died of pneumonia. There was a history of constitutional syphilis, and rupial scars over the arms and legs.

26. Atheromatous degeneration of the arch of the aorta, in parts advanced to calcareous infiltration, and the formation of large, irregular, yellowish, hard plates, which lie very superficially on the inner surface of the vessel. From a native female, aged 55.

27. Aneurism of the abdominal aorta, the size of a hen's egg, taking its origin at the root of the superior mesenteric artery.

Found on *post mortem* examination of a European, aged 65, who died in hospital from acute pulmonary tuberculosis.

(See prep. No. 291, Series VI, page 188.)

28. 29. Two plates illustrating the appearances presented by a remarkably large diffused aneurism of the abdominal aorta, surrounding the left kidney, and proving fatal from rupture into the pleural cavity.

Case of F. Pallerini, an Italian seaman, aged 42.

(See prep. No. 293, Series VI, p. 189, and *Medical Post-mortem Records*, vol. II, 1877, p. 543-44.)

30. Acute diffuse miliary tuberculosis of the lung. From a native male (adult), who died in hospital.

31. The apex of the right lung, illustrating the so-called "obsolescence of tubercle." A vertical section is represented. One large and several smaller cheesy nodules are seen, (lying just beneath a thickened and puckered condition of the pleura), and there is condensation, fibroid thickening, and pigmentation of the surrounding pulmonary tissue.

(See prep. No. 86, Series VII, p. 225.)

32. A large sanguineous cyst of the arachnoid, completely covering the upper surface of the right cerebral hemisphere. Case of Pedro Visconti, a Malay, who died from epilepsy.

(For description and history, see prep. No. 48, Series VIII, p. 256.)

33. Acute red softening of the left corpus striatum. From a native male, aged 30, who died from chronic empyema. Multiple, small, circumscribed spots of similar softening were found in other parts of the brain,—particularly in the cortex.

(See further, prep. No. 12, Series VIII, p. 247.)

34. Punctated ecchymosis (miliary apoplexy) of the brain. From a case of scorbutic dysentery—a European seaman, aged 62.

35. 36. 37. Acute cerebro-spinal meningitis. Three coloured plates showing, respectively, the appearance presented by (a) the upper surface of the brain, (b) the base of the brain, and (c) the spinal cord. In all three instances there is waxy-looking opacity of the membranes from recent sero-fibrinous effusion, and an abnormally injected and varicose condition of the blood-vessels.

Case of a native male, aged 27, who died on the ninth day of the disease. (*Medical Post-mortem Records*, vol. I, 1873, pp. 103-4).

38. The spinal cord and membranes, from a similar case (acute meningeal inflammation).

39. Malarial pigmentation of the brain. Sections from the cerebrum and cerebellum, showing a dark leaden appearance of the grey matter of the convolutions, and a dusky discolouration of the white substance. With these are drawings of sections from the spleen and liver, exhibiting also very dark pigmentation.

(See further, preps. No. 29-34, Series VIII, pp. 251-52.)

40. The circle of Willis, showing a firm decolourised fibrinous clot impacted in the basilar and vertebral arteries. From a native male patient, a *ganja-smoker*, aged 45, admitted into hospital

with symptoms of apoplexy. The attack was sudden,—commenced with convulsions, and gradually passed into coma, in which state the man died.

(See prep. No. 73, Series VIII, p. 263.)

41. A fibro-papillary growth (psammoma), about the size of a nutmeg, attached to the free margin of the falx cerebri. Found on *post mortem* examination of a native female, aged 50, who died of dysentery.

(See further, prep. No. 66, Series VIII, p. 261.)

42. Acute inflammation and softening of the mucous membrane of the stomach, from a case (a native female patient) of poisoning by yellow arsenic. Many of the metallic particles are seen still adherent to the surface.

43. The stomach and duodenum from a case of arsenical poisoning. There are scattered patches of bright red vascularity and softening of the mucous membrane, and to some of them may be seen adhering minute yellow particles of the metal.

(See further, prep. No. 24, Series IX, p. 283.)

44. Another coloured drawing of the inner surface of the stomach from a case of poisoning by arsenic, showing the intense vascularity and corrugation of the mucous membrane, and the presence of a large amount of the poison, in the form of yellow adhering particles.

45. Minute pigmented ulcers (erosions) of the mucous membrane of the stomach. From a native male, aged 40, who died of acute dysentery, complicated with gastritis.

(See further, *Medical Post-mortem Records*, vol. II, 1878, pp. 859-60.)

46. A portion of the ileum (with the cæcum) from a case of true typhoid or enteric fever, a Goorkha sepoy, aged 22, who died on the twelfth day of the disease.

(See prep. No. 96, Series IX, p. 302.)

47. The cæcum and about three feet of the ileum showing enormous fungoid prominence, vascularity, and infarction of the patches of Peyer and solitary glands, with also superficial sloughing of portions of the former. The mesenteric glands are seen enlarged, swollen, and hyperæmic. From an Armenian child, aged seven years, who died in hospital of typhoid or enteric fever.

(See prep. No. 98, Series IX, p. 303.)

48. Tumefied and partially ulcerated patches of Peyer and solitary follicles at the lower end of the ileum. From a European male patient, aged 30, who died in hospital from typhoid fever, while undergoing treatment for popliteal aneurism.

(See further, prep. No. 94, Series IX, p. 301.)

49. Scorbutic dysentery. A portion of the descending colon, sigmoid flexure, and rectum showing intense ecchymosis and superficial ulceration of the mucous membrane, and large irregular circumscribed blood-extravasations beneath the peritoneal coat.

50. The appearance of the small intestine in the same disease (scorbutus or scurvy). Large blood-extravasations are seen immediately beneath the peritoneal coat of the small intestine (ileum).

51. A portion of the large intestine and the liver of a native male (Hindu), aged 24, who died in hospital. The former exhibits much chronic ulceration, thickening, and cicatricial contraction in the cæcum; a large old ulcer near the hepatic flexure of the colon; and recent acute dysenteric changes throughout the rest of the gut, which is covered, at the seat of both old and recent lesions, with granular opaque fibrinous exudation (lymph). The liver shows numerous, recent, mostly small and circumscribed abscesses, projecting slightly from the surface, and surrounded by distinct bright-pink zones of vascular congestion.
(See further, *Medical Post-mortem Records*, vol. III, 1880, pp. 587-88).
52. 53. Two coloured plates showing, respectively, a darkly punctated appearance of the patches of Peyer (*plaques pointillées*) in the small intestine,—commonly found in cholera, acute diarrhœa, and other diseases associated with follicular irritation of the bowel; and a similar condition of the colon,—frequently met with in chronic dysentery, &c.
54. Perforation of the duodenum by a round worm (*Ascaris lumbricoides*).
Case of a native female, aged 30, who died from acute general peritonitis, the result of this accident. (See prep. No. 151, Series IX, and *Medical Post-mortem Records*, vol. II, 1878, pp. 473-74).
55. Volvulus or twist of the large gut (sigmoid flexure and portion of descending colon), with consequent strangulation, and death from obstruction of the bowels and peritonitis.
(Prep. No. 182, Series IX, p. 321).
56. Hodgkin's disease or lymphadenoma.—The ileum, mesenteric glands and spleen, all exhibiting morbid lymphoid infiltration and nodular deposits. From an East Indian woman, aged 25, who was brought into hospital in a moribund condition, and died, within 24 hours of admission, with no definite symptoms but those of great exhaustion and collapse.
(For further description, see preps. No. 259, Series IX, p. 333, and No. 68, Series X, p. 375).
57. Multiple glandular growths (tubular adenomata) of the stomach. The case of an American (ship-captain), who died in the General Hospital.
(For description and history, see prep. No. 182, Series XVII, p. 580).
58. 59. Small multiple abscesses of the liver,—appearance on the surface, and on section of the organ. From a native male patient, aged 24, who died in hospital of acute dysentery.
60. Multiple pyæmic abscesses of the liver. From a native male (Hindu), aged 25, admitted into hospital with chronic dysentery.
(For further description, see prep. 302, Series IX, p. 342.)
61. Multiple abscess of the liver (pyæmic). The lowermost and largest, at the surface of the right lobe, was diagnosed and opened during life. From a native male, aged 30, who died in hospital. (See further, prep. No. 303, Series IX, p. 342.)
62. Large abscess on the inferior surface of the right lobe of the liver, showing the passage of pus from the same into the inferior

vena cava. There were multiple abscesses (pyæmic) in both lungs.

- 63.** Perihepatic abscess opening into the pericardium. Case of Patrick O'Brien, aged 32, who died in hospital.

(See further, prep. No. 310, Series IX, p. 345, and *Medical Post-mortem Records*, vol. I, 1875, pp. 769-70).

- 64.** Scirrhus carcinoma of the liver. Case of Joseph Galestin (Armenian), aged 80.

(For description, see prep. No. 336, Series IX, p. 349).

- 65.** Scirrhus carcinoma of the liver.—The distorted and nodulated condition of the organ on both its upper and under surfaces, and the pinkish-yellow appearance of the infiltrating cancerous growths are very characteristically displayed. From an East Indian female, aged 40.

(See further, prep. No. 340, Series IX p. 351).

- 66.** Enkephaloid carcinoma of the liver.—From a native female, aged 60. The disease was of about four months' duration.

(See prep. No. 334, Series IX, p. 349).

- 67.** Enkephaloid carcinoma of the liver.—The appearances presented by the morbid growths on the surface and on section of the organ are very characteristically displayed. Case of a Hindu female, aged 40.

(For description and history, see prep. No. 338, Series IX, p. 350).

- 68. 69.** Two plates of melanotic (enkephaloid) carcinoma of the liver. Both at the surface, and throughout the parenchyma, the organ is thickly infiltrated with soft, dark, pigmentary deposits, varying in size from a pea to a walnut. From an East Indian male, aged 44.

(See further, prep. No. 342, Series IX, p. 352, and *Medical Post-mortem Records*, vol. I, 1873, p. 16).

- 70.** Enlarged, hyperæmic and deeply *bile-stained* liver, from a fatal case of acute cholæmia.

- 71.** "Nutmeggy liver," or chronic intra-lobular hepatic congestion and pigmentation.

- 72.** A section from the right lobe of a liver which weighed 8lbs 11 ounces. It shows very extensive fatty infiltration, combined with incipient cirrhosis,—the result of chronic alcoholism.

(See further, prep. No. 324, Series IX, p. 347).

- 73.** Hæmorrhagic infarctions ("blocks") in the spleen, undergoing decolourisation.

From a native female, aged 18, who died, on the ninth day after delivery, from puerperal fever (septicæmia).

(*Obstetric Post-mortem Records*, vol. I, 1875, p. 186).

- 74.** A chronically enlarged and pigmented spleen, showing a large, triangular-shaped decolourised infarction at its upper border, and smaller scattered ones on the anterior surface, just beneath the capsule.

From a native female, aged 18, who died from puerperal fever (septicæmia), on the ninth day after delivery.

- 75.** Abscess of the spleen.—The organ is considerably enlarged, and, at its upper end, close to the surface, a ragged abscess-

cavity, the size of a small orange, may be seen, the walls of which are sloughy, and were adherent to the diaphragm. From a native lad, aged 15.

(See prep. No. 35, Series X, p. 369).

76. Intense congestion of the kidneys in cholera,—death taking place in the “collapse stage.”

The congestion is seen to be chiefly venous, and is displayed principally in the pyramidal structure, the cones of which present a dark purplish (streaky) colour, from fullness of the straight veins.

77. Intense congestion of the kidneys, with desquamation of epithelium, and obstruction of the uriniferous tubules (acute desquamative nephritis) in cholera,—death taking place in the “reaction stage.” The congestion is most marked in the medullary structure; the cortex is comparatively pale, and has an opaque yellowish appearance from intra-tubular shredding and accumulation of epithelium.

78. Chronic passive congestion of the kidneys, with expansion of the pelves and calyces, and commencing atrophy of the secreting structure. From a case of puerperal eclampsia,—a native female, (primipera), aged 19, who died, comatose, forty hours after delivery.

(See further, prep. No. 24, Series XI, p. 388).

79. Intense dusky hyperæmia of the kidneys, with bile-staining. From a fatal case of acute cholæmia,—a native male patient who died in hospital.

80. 81. Two coloured plates illustrative of a peculiar hæmorrhagic condition of the kidneys (nephritis purpurea), consisting of great congestion with minute ecchymosis of the renal structure,—the latter most marked at the surface. The drawings were taken from well marked specimens,—in the one case, from a native female, aged 28, who died of carcinoma of the rectum; in the other, from a native female, aged 20, who died of chronic dysentery. In both instances there was no general purpuric condition of the skin or mucous membranes, but excessive anæmia or spanæmia persisted during life, and was evidenced by most of the organs after death.

82. Hæmorrhagic infarction and acute suppuration of the kidneys. Case of a European woman, aged 30, who died in hospital from uræmia (convulsions, coma, &c.).

(For full description and history, see prep. No. 103, Series XI, p. 406, and *Medical Post-mortem Records*, vol. III, 1879, pp. 167-68).

83. Acute suppurative nephritis (“surgical kidney”). The genito-urinary organs of a native male patient, aged 45. The kidneys are enlarged and highly vascular, thickly infiltrated with small circumscribed abscesses. The prostate is swollen and pus-infiltrated. There is a stricture at the junction of the membranous and bulbous portions of the urethra, the prostatic portion being dilated. (See further, prep. No. 38, Series XII, p. 425, and *Surgical Post-mortem Records*, vol. I, 1877, p. 356)

84. Morbus Brightii. Large white kidneys (tubular nephritis).

85. Cystic degeneration of the kidney, following or associated with longstanding stricture of the urethra.
86. Cystic degeneration of the kidneys, most advanced in the left, the cysts in which are of large size, and filled with opaque-white, putty-like, phosphatic material. This condition was associated with colloid cancer of the peritoneum.
87. "Horse-shoe" kidney, showing the position and shape of the organ, and its relations to the ureters and bladder.
88. 89. Two coloured plates, one showing an enormous elephantiasis of the scrotum, the mass weighing, on removal, 110lbs., the other, the appearance presented by the penis and perinæum after the healing of the wound. The patient, a Hindu, aged about 40, was successfully operated upon by Professor S. B. Partridge. [The diseased scrotum is now in the possession of the Royal College of Surgeons, London.]
90. Elephantiasis scroti.—A very large growth, removed by operation, but resulting in the death of the patient.
91. Elephantiasis of the scrotum and prepuce, a very large tumour, successfully removed by operation.
92. Elephantiasis scroti.—Successfully removed by Professor K. McLcod. The weight of the mass, after removal, was 48lbs. Case of Ram Lal Bannerjee (Bengali), aged 48, admitted 31st October 1875, discharged cured on 21st January 1876.
93. Elephantiasis scroti. Weight 39lbs.—Case of Ram Jeeban Hazra (Bengali), aged 43, successfully operated upon by Professor S. B. Partridge. Admitted 1st December 1873; discharged 10th January 1874.
94. Elephantiasis preputii.—A large softly tuberculated growth affecting the prepuce only,—the scrotum remaining free of disease.
95. Nœvoid elephantiasis of the scrotum, showing great dilatation and varicosity of the superficial cutaneous lymphatics, associated with the thickening and œdema of the scrotal tissues. Case of a young Hindu adult, operated upon successfully by Professor K. McLcod.
96. Enkephaloid carcinoma of the uterus and appendages, with consequent dilation of the ureters and pelvis of the kidneys (from pressure).
Case of a native woman, aged 40, who died in hospital.
(See further, prep. No. 53, Series XIV, p. 458.)
97. Enkephaloid carcinoma of the uterus.—Case of Elizabeth Lewis, aged 40.—See prep. No. 56, Series XIV, p. 459, and *Obstetrical Post-mortem Records*, vol. I, 1877, pp. 353-54.
98. Colloid cancer affecting both ovaries, which are greatly enlarged, vascular, and cystic. From a native woman, aged 40, who died in hospital. (For description and history, see prep. No. 205, Series XVII, p. 587, and *Medical Post-mortem Records*, vol. I, 1875, pp. 807-8.)
99. Dropsy of the Fallopian tubes.—Their fimbriated extremities present a convoluted, highly distended, and swollen condition, and contained clear, limpid, serous fluid. Found on *post mortem*

examination of the body of a native female, aged 25, who died from pulmonary phthisis. No symptoms of the tubal disease existed during life. (Prep. No. 99, Series XIV.)

100. Very far advanced tubercular leprosy. The characteristic thickening of the skin of the face (nose, ears, &c.), and of the nipples is well seen, and also the peculiar contraction of the fingers. Case of J. R.—(Eurasian), aged 26.
101. Elephantiasis Græcorum, or true leprosy (mixed variety).—The tuberculated condition of the face, and anæsthetic stainings of the body generally, are well seen. The patient was a young man of mixed parentage, under treatment in hospital.
102. Elephantiasis Græcorum (leprosy)—mixed variety, a Hindu male, aged 45. The serpiginous character of the eruption is well displayed.
103. Elephantiasis Græcorum (leprosy), mixed variety.—The leprous eruption in a state of ulceration. Case of a native (Hindu) lad, aged 18, who underwent treatment by *gurjan oil*, but with no benefit.
104. Morphœa alba.
105. Molluseum fibrosum (fibroma fungoides.)
106. Molluseum fibrosum.—Sketch of a native woman, aged 22, the body covered with semi-pendulous fibroid growths, varying in size from a hazelnut to an orange. A very large mass of the same structure is attached, by a broad fleshy peduncle, to the inner side of the left arm. The growths were said to be congenital. One, removed from the left gluteal region, was examined microscopically,—see prep No. 73, Series XVI, p. 505.
107. Molluseum fibrosum.—A very large lobulated, semi-pendulous, and darkly pigmented growth, involving the skin and subcutaneous tissues of the buttocks, lower part of the back, and left thigh of a young Hindu lad. A portion of the mass was excised, and is described in prep. No. 72, Series XVI, p. 504.
108. Tubercular syphiloid affecting the face principally. Case of a European patient in hospital.
109. Syphilitic alopecia.
110. 111. 112. Mycetoma—the so-called “fungus-foot.” Case of Lal Mohun, aged 40, a native of Burdwan (Bengal). The growth was of eleven years’ duration. Admitted into hospital 17th January 1877; amputation of the foot performed 30th January; discharged cured, 15th April 1877. The appearances presented by the foot (right) are characteristic, and the larger drawings (111 and 112) display, very distinctly, the morbid changes in the skin, and (as revealed on longitudinal section) in the soft parts and osseous structures.
113. “Aihnum.”—Appearances presented by the amputated toe in this disease,—see prep. No. 47, Series XVI, p. 499.
114. A round-celled sarcoma involving the bony and soft tissues on the anterior aspect of the lower third of the right forearm. From a native male patient, aged 50.
(Prep. No. 9, Series XVII, p. 524).

- 115.** Spindle-celled sarcoma of the left thigh, of five months' growth. From a Mahomedan boy, aged 9 years. Amputation performed at the hip-joint. (Prep. No. 37, Series XVII, p. 534).
- 116.** Spindle-celled sarcoma of the right leg, involving only the tibia. Case of a native male (Hindu), aged 25. (Prep. No. 39, Series XVII, p. 535).
- 117.** Spindle-celled sarcoma of the left femur, of about nine months growth. From a native lad, aged 16. Amputation performed at the hip-joint.
- 118.** Osteo-sarcoma of the right leg. The growth involves the upper two-thirds of the tibia, and superjacent soft parts. The knee-joint was not affected. From a native male patient, aged 18. Disease of about nine months' duration. (Prep. No. 134, Series XVII, p. 568).
- 119.** Polypoid or pendulous fibroma of the right shoulder,—a growth of about two and a half years. Successfully removed by operation. Case of a native male in-patient, aged 48.
- 120.** Fibroid epulis of the upper jaw,—successfully removed by operation.
- 121. 122. 123.** Fibroma of the lower jaw. Three plates showing, respectively, (*a*) the appearance of the patient prior to operation, (*b*) the result of the operation, and (*c*) the structure of the growth after removal. Case of Bhipro, a Hindu, aged 20. Disease of three years' duration. (Prep. No. 74, Series XVII, p. 547).
- 124. 125.** Fibro-cystic tumour of the lower jaw, of about three and a half years' duration. Two plates,—one showing the appearance of the patient prior to operation, the other, the structure of the growth after removal with the jaw. Case of a Hindu, aged 40. (See further, prep. No. 80, Series XVII, p. 549).
- 126.** Enormous fatty tumour (fibro-lipoma) of the back and neck,—said to be of about three years' growth. The patient was a Mahomedan, aged 40. (See further, prep. No. 98, Series XVII, p. 555).
- 127. 128.** Fibroid enchondroma, of twenty years' growth, in a native female, aged 60,—successfully removed by Professor Gayer. The two plates show, respectively, the appearance of the patient prior to removal of the tumour, and of the latter, after removal. (See further, prep. No. 113, Series XVII, p. 559).
- 129. 130. 131.** Three sepia drawings of a gigantic ossifying enchondroma of the left leg. The first exhibits the entire growth with the amputated leg. The second and third show the appearances presented on vertical section through the tumour. (Prep. No. 108, Series XVII, p. 557).
- 132.** Enchondro-sarcoma of the upper end of the right femur, forming a huge lobulated mass, which measured 26" in circumference. Case of a native male patient, aged 60, who died in hospital. The tumour was of about two years' growth. (Prep. No. 121, Series XVII, p. 562).

- 133. 134.** Osteoma of the right tibia, of about eight years' duration. Two plates showing, respectively, the appearance of the limb prior to amputation, and the cavernous structure of the tumour on longitudinal section of the parts involved. From a native male, aged 35. (Prep. No. 125, Series XVII, p. 564).
- 135.** An excellent representation of the structural anatomy of chronic mammary glandular tumour (acinous adenoma).
- 136.** Enkephaloid carcinoma of the femur, for which amputation at the hip-joint was performed, but the growth recurring in the stump and pelvis, the patient, a native lad, aged fifteen, died about three months after the operation.
- 137.** Enkephaloid carcinoma of the lower end of the right femur, involving the knee-joint. A growth of five months' duration; from a Hindu lad, aged 15. Amputation performed at the hip-joint.
(See further, prep. No. 203, Series XVII, p. 586).
- 138.** A sepia-drawing of an hermaphrodite foetus born in the hospital.
- 139.** Female foetus with aborted twin-development. For full description, see prep. No. 22, Series XVIII, p. 620.
- 140.** Congenital malformation of the index and middle fingers of the right hand. Case of a native male, aged 30, who died from psoas abscess, &c.
(See prep. No. 17, Series XVIII, p. 620).





APPENDIX B.*

CONTINUATION TO SERIES I.

FRACTURES AND DISLOCATIONS.

INDEX.

FRACTURE OF THE SPINE, 198.

„ „ PELVIS, 199.

„ „ FEMUR, 200.

GUNSHOT FRACTURES, 201, 202.

ILLUSTRATIONS OF TREPHINING, 203, 204.

198. Fracture of the last dorsal vertebra, the result of the fall of a bag of rice upon the back of a native coolie. The vertebra has been completely crushed, the body being extensively comminuted. A linear fracture also, running perpendicularly, has produced wide fissuring of the posterior half of the body of the eleventh dorsal, and extends into the lower half of the posterior lamina of the tenth dorsal vertebra. There was considerable laceration of the cord. The patient was admitted into hospital quite paraplegic, and died on the eleventh day after the injury.

199. Comminuted fracture of the pelvis, involving the rami of the pubes and ischium, and the lateral masses of the sacrum.

200. Compound comminuted fracture of the lower third of the left femur, with erosion of the femoral artery by the sharp edge of the broken bone, causing secondary hæmorrhage, and necessitating amputation of the thigh.

Case of a native male, aged 50, who fell from a tree, and was admitted with a compound fracture of the thigh, on the 28th November 1880.

The wound was dressed antiseptically, and the fracture reduced. On the 31st December, secondary hæmorrhage, in the form of smart oozing from the wound, set in, and continued intermittingly, in spite of all attempts to control it, for four days, when amputation had to be performed.

The preparation is interesting as showing the amount of repair accomplished in so severe an injury. The medullary canal, above and below the fracture, is closed by firm organising

* Preparations added to the museum (or overlooked) during the passage through the press of the several parts of this Catalogue.

exudation (lymph), and a large detached fragment still retains its vitality, although only partially invested by periosteum. The cause of the secondary hæmorrhage was an injury to the external coat of the femoral (in Hunter's canal), probably at the time of the accident,—the walls of the vessel, at this spot, becoming gradually thinned, and at last, *i.e.*, after the lapse of more than a month, giving way. A very minute opening, not larger than a pin's head, was found, deeply seated, on the inner side of the lower fragment, and the recurrent and severe hæmorrhage was evidently from this part of the artery. The femoral vein is quite healthy. Two glass rods indicate, respectively, the positions of these vessels, and that in the artery has been pushed through the walls at the spot where injured, as above described.

Presented by Professor K. McLeod.

- 201.** Compound fracture of the shaft of the humerus, close to the surgical neck, the result of gun-shot injury. "The gun, loaded with shot, was within a couple of feet of the shoulder when it exploded." The aperture of entrance is rounded, and its margins are blackened by gunpowder. The upper fragment is denuded of periosteum (by the spread of the charge), and the lower is splintered for some distance.

Case of J. G--, an Eurasian lad. The limb was amputated at the shoulder-joint.

Presented by Professor S. B. Partridge.

- 202.** A preparation showing a gun-shot injury to the right hand. The charge apparently entered the palm of the hand, in the interspace between the index finger and thumb, and made its exit at the corresponding portion of the dorsum, the orifice here being large and much lacerated. The second and third metacarpal bones and several of the bones of the carpus are comminuted. The thumb has been almost completely blown off.

- 203.** The vertex of the skull, with a circle of bone removed by the trephine.

"The man was thrown from a horse, fell on his head, was picked up insensible, symptoms of pressure supervened, the trephine was applied and the circle of bone removed without finding blood or affording relief. He died from bleeding into the corpus striatum."

The skull-cap is remarkably thin, but, curiously enough, is not fractured, although the force of the fall was sufficiently severe to produce laceration of and hæmorrhage into the brain-substance.

The aperture made by the trephine is situated half an inch above and behind the anterior inferior angle of the right parietal bone, between the grooves for the anterior and posterior branches of the middle meningeal artery, neither of which are implicated.

Presented by Professor W. J. Palmer.

- 204.** Portions of trephined bone from the skull, being fragments of a depressed fracture of the right parietal bone. From a native male, aged 32, employed at the Ishapore Gunpowder Factory. The man "was working in the mill-yard, when an explosion took place in a house which stood about 250 yards from where he was.

"At the moment of the explosion he was in the act of stooping down, repairing the tramway line. He felt a sudden shock, and was thrown down, but heard no noise, and believes that his head came in violent contact with the iron rail. Insensibility ensued, but he quite recovered consciousness by the time he was removed to the hospital,—a period of about a quarter of an hour. Five hours afterwards, there being still no symptoms, the skull was trepanned. The patient remained in hospital for one month and eleven days, suffering hardly any inconvenience. When discharged, he at once resumed his work."

(See further, *Indian Medical Gazette*, December 1874, p. 317).

Presented by Surgeon-Major E. A. Birch, F.R.C.S.

CONTINUATION TO SERIES II.

DISEASES OF THE BONES.

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PERIOSTITIS (SYPHILITIC NODE), 192.

NECROSIS, 193, 194, 195.

TUMOUR, 196, 197.

192. Syphilitic node of the tibia, the result of chronic specific periostitis and ostitis. The bone over the skin, for a space of 3" in length and 1" in breadth is rough, raised, and forms an oval-shaped bony excrescence, which, on section, is seen to consist of a dense thickening of the compact tissue of the shaft, extending also into the medullary canal, and producing great narrowing of the same, with consolidation of the cancellous structure.

From a West Indian adult (male), who died of "syphilitic phthisis."

Presented by Dr. A. Vans Best, Presidency General Hospital.

193. "Sequestrum from a case of cancrum oris, consisting of the palatine plate and part of the alveolar process of the right superior maxillary bone, the palatine and perpendicular plate and pterygoid process of the right palate bone, and part of the right pterygoid process of the sphenoid. The posterior or palatine canal is included in the sequestrum." (Colles).

Presented by Professor N. Chevers.

194. "Anterior portion of both superior maxillary bones (with the right canine tooth still *in situ*), exfoliated from a case of cancrum oris in a native lad. The patient died of pneumonia of a low type. He had been exposed to malaria." (Colles.)

Presented by Professor N. Chevers.

195. Exfoliated portions of the shaft, from a case of necrosis of the radius. No history.

Presented by Surgeon-Major E. A. Birch, Hazaribagh.

- 196.** The bony framework or skeleton of a large tumour (osteosarcoma) involving the middle third of the right tibia. The fibula is deflected outwards considerably, but not involved in the growth. "From a native. Amputation was successfully performed below the knee."

Presented by Dr. T. Duka, Civil Surgeon, Monghyr.

- 197.** A similar specimen. The bony portion of a large growth (osteosarcomatous tumour) involving the whole of the inferior extremity and lower third of the shaft of the left tibia. The morbid growth probably originated in the cancellous tissue or medullary canal, and has expanded the bony structures around it. Its dimensions are--circumference transversely 15," longitudinally 20." No history.

CONTINUATION TO SERIES III.

DISEASES OF THE JOINTS.

INDEX.

RESECTION OF JOINTS FOR CARIES, 57, 58.

- 57.** Caries of the head of the humerus. The cancellous tissue is much softened, and at one part deeply excavated. The bone was removed after opening the shoulder-joint (resection.)

Presented by Professor J. Fayrer.

- 58.** Excision of the knee-joint for chronic articular disease. A section from the condyles of the femur, another from the head of the tibia, and the whole of the patella, were removed, and are preserved. The articular cartilage is seen to have undergone almost complete absorption; the bone is exposed and carious, considerably excavated on the inferior aspect of the internal condyle. The joint, when opened, was found full of pus. Case of a native male patient (Hindu), aged 30.

Presented by Professor D. O'C. Raye.

CONTINUATION TO SERIES V.

DISEASES OF THE SPINE.

INDEX.

FIBROID DEGENERATION OF VERTEBRÆ, 24.

- 24.** A portion of the dorsal and lumbar spine of a native male (Hindu), aged 40, who died paraplegic, after the removal of a sarcomatous

tumour from the back. (See prep. No. 53, Series XVII, p. 541.) A recurrent sarcomatous nodule had made its way into the spine, the eleventh dorsal vertebra (see preparation) being almost entirely absorbed, and the cord and membranes much softened and compressed at this spot. The upper half of the twelfth dorsal vertebra is seen converted into firm but lardaceous looking material, having a glistening pale-yellowish appearance. The first lumbar vertebra is healthy, the second completely transformed into the same substance as above noted. The third lumbar is again free, but the fourth and fifth degenerated. The changes referred to are very peculiar. No reproduction of specific, *i.e.*, sarcomatous structure, is discoverable on microscopic examination, except in the soft parts in the immediate vicinity of the destroyed vertebra (eleventh dorsal). The glistening lardaceous material into which the bodies of the other vertebræ have been converted is purely *fibroid*, *i.e.*, consists of closely-meshed white fibrous tissue, firm and tough, swelling up on the addition of acetic acid, and then displaying numerous small nuclei, but no proper *cell* elements, and nothing approaching to sarcomatous transformation. The change seems to consist, essentially, of a dissolving out of the mineral or earthy matter of the bone, and its consequent reversion to a primitive fibroid tissue, either wholly or in part.

CONTINUATION TO SERIES VI.

INJURIES AND DISEASES OF THE HEART AND BLOOD-VESSELS.

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RUPTURE OF THE HEART, 345.

PARTIAL OR LOCAL DILATATION (ANEURISMAL POUCHING), 346.

THICKENING AND INDURATION OF VALVE-FLAPS (SYPHILITIC), 347.

ANEURISM OF ARCH OF AORTA (ASCENDING PORTION), 348.

EFFECTS OF THE TREATMENT OF ANEURISM (LAMINATED FIBRINOUS DEPOSIT), 349.

345. Rupture of the heart.—The preparation exhibits two lacerations involving the entire thickness of the cardiac walls. Both are situated on the posterior surface of the left ventricle. One, $1\frac{1}{2}$ " long, commences at the base of the left appendix auriculæ, and extends in a direction downwards and backwards. The other, about 4" in length, and running at first along the left auriculo-ventricular groove, reaches the posterior inter-ventricular furrow through which it extends as far as the apex of the heart, laying open the left ventricle completely, but leaving the septum intact and also the right cavities.

The margins of both lacerations are irregular and ragged.

"The man was a healthy railway employé, aged 30; was jammed between a carriage which was being shunted and a gate. He died almost immediately. Besides the injury to the heart, the liver was slightly fissured in two places, on the upper aspect of the right lobe posteriorly. The pericardium was filled with coagulated blood. There was no sign of an external bruise, and no bones were broken, ribs all uninjured. The heart was crushed between the sternum and the spine. There was an ecchymosed patch on the front of the spine behind the heart." (Note by Dr. O'Brien.)

Presented by Dr. J. O'Brien, Civil Surgeon, Burdwan.

346. A preparation showing a greatly dilated and hypertrophied heart, with extensive chronic inflammation of the lining membrane and valves (endocarditis), and aneurismal pouching of the left ventricle.

In the right ventricle the endocardial thickening is very remarkable, especially towards the apex and over the anterior wall, where the muscular tissue has almost entirely disappeared. The pulmonary valves are healthy. The superior and inferior tricuspid valves are thinned and stretched, the posterior flap is adherent to the posterior ventricular wall, and blended with the fibroid thickening of this part. The right auricle and ventricle are both greatly dilated.

On the left side, there is similar very marked endocardial thickening, affecting both auricle and ventricle, with dilatation of these cavities, and slight opacity of the mitral and aortic valves, particularly of the latter. The changes are, however, less valvular than general, *i.e.*, affect principally the endocardial lining of the ventricle. At the superior and posterior angle of the latter—the retiring angle between the posterior wall and reatum—and about half an inch below the aortic orifice, there is an aneurismal-like dilatation of the ventricular wall, sufficiently large to hold a hen's egg. It projects backwards and to the right. The muscular tissue forming this pouch is much thinned where it reaches the surface of the heart. Its inner surface is lined by thickened vascular endocardium, and it contained dark, soft, blood-coagulum,—no laminated fibrin.

There was general, acute, sero-fibrinous pericarditis of recent origin; and no less than thirty ounces of dark, sanguinolent, turbid fluid filled the pericardial sac. The heart weighs 19 ounces. From a native male patient, aged 40, who died in hospital.

347. The heart of a native male (Hindu), aged 42, who was under treatment in hospital for syphilitic necrosis of the palate and nasal bones, but who died of dysentery. The aortic valves exhibit remarkable thickening, puckering and distortion. Their structure, at the free margins, is almost cartilaginous in consistency, yet quite free from calcareous deposit, so common in ordinary atheroma. The changes are, therefore, believed to be specific, *i.e.* syphilitic in character.

(See further, *Surgical Post-mortem Records*, vol. I, 1881, pp. 869-70).

348. Large sacculated aneurism of the thoracic aorta. It is the size of a pomegranate, ovoid in shape, and arises from the angle

of junction of the ascending and transverse portions of the arch. The mouth of the sac is situated about two inches above the aortic orifice, it is rounded, and has a diameter of two and a half inches. The margin is prominent, but smooth. All the coats of the vessel apparently enter into the formation of the sac. Its inner surface is thickened and opaque, and its cavity about three parts filled with laminated firm decolourised coagulum, while a large, partially fibrinous, and more recent clot was found, *post mortem*, extending into the mouth of the sac from the left ventricle. The orifices of origin of the innominate, left carotid, and left subclavian arteries are not involved in the aneurism. The latter extends backwards and to the right. The anterior and outer surfaces of the sac are thickened by adventitious fibrous tissue, the posterior wall is greatly thinned, and was closely adherent to the trachea (for about two inches above its bifurcation), and also to the right and left bronchi.

The inner surface of the whole of the aortic arch shows patches of atheromatous thickening, and is generally opaque and rigid. The innominate artery, for the whole of its extent, is bound down, by strong fibrous adhesions, to the upper and outer aspects of the aneurismal tumour.

History.—"Charles F—, an English seaman, aged 41, was admitted into the Presidency General Hospital on the 18th March 1880. He stated that he had had an asthmatic attack five or six months ago. Three weeks ago began to cough and suffer from difficulty of breathing, and now cannot lie down."

"There is considerable dyspnœa; a loud, shrill, tearing cough. Pulse weak. Skin pale and moist from copious perspiration. Physical examination of the chest showed nothing more than loud bronchitic, wheezing and sonorous râles everywhere, with some moist sounds. The heart's sounds were faintly audible, but normal, presenting no murmur."

"The man got steadily worse each day. He could get no sleep, and in addition to the peculiar cough, his respiration became very harsh and loud. His voice remained clear, and it was very evident that the larynx was not at fault. He died exhausted on the 27th March 1880."

Presented by Dr. C. H. Joubert, Presidency General Hospital.

349. "Finely laminated coagulum of fibrine from a spontaneously cured case of aortic aneurism." (Ewart.)

Presented by Dr. Edward Goodeve.

CONTINUATION TO SERIES VII.

INJURIES AND DISEASES OF THE LARYNX, TRACHEA, BRONCHI, AND BRONCHIAL GLANDS, OF THE LUNGS AND PLEURA.

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PHTHISIS (TUBERCULAR), 160.

„ (NON-TUBERCULAR OR CATARRHAL, WITH PYO-THORAX), 161.

TRACHEOTOMY, 162.

158. The larynx of a Hindu male, aged 50, who died from chronic dysentery, showing a small polypoid growth developing from the anterior aspect of the right half of the epiglottis. It is the size of a small hazelnut, and lies in the sulcus between the base of the tongue and epiglottis. On incision is found to be a sebaceous cyst,—is filled with thick creamy pinkish-white material. No difficulty in respiration or deglutition seems to have been occasioned by the presence of this growth, which was only discovered *post mortem*.

159. Syphilitic laryngitis. The larynx of a native female, aged 35, who died in hospital. At the base of the tongue, between it and the epiglottis, the mucous membrane presents an opaque, thickened, and puckered appearance. The epiglottis itself is deeply fissured. The mucous membrane on its under surface is swollen and granular, had a dusky-red or purplish colour in the fresh state. The aryteno-epiglottidean folds are extensively ulcerated, and there is also a deep ulcer at the junction of the vocal cords anteriorly. The superior vocal cords have been entirely destroyed, and also the left true vocal cord. The mucous and submucous tissues investing the arytenoid cartilages are greatly swollen and œdematous, and the rima glottidis so greatly contracted, that it admits with some difficulty a crow-quill. The cricoid cartilage, for its posterior half, is exposed, rough, and denuded of perichondrium (necrosed).

(*Surgical Post-mortem Records*, vol. I, 1881, pp. 789-90.)

160. The left lung of a native male patient (Hindu), aged 20, who died in hospital, showing, very typically, the morbid anatomy of acute tubercular phthisis. The immediate cause of death was tubercular meningitis (cerebral), with softening of the posterior superficial laminæ of the left optic thalamus, and adjacent portion of the posterior cerebral lobe. There was much lymph effused at the base of the brain, and the ventricles were distended with turbid serum.

161. Broncho-pneumonic or caseous phthisis, associated with pyo-thorax. The left lung of a native male, aged 21, exhibiting considerable cheesy consolidation, and riddled with larger and smaller cavities or vomicæ, one of which, at the upper and back part of the lower lobe, burst into the pleura, and set up acute suppurative inflammation (empyema), to which the patient rapidly succumbed.

(See further, *Medical Post-mortem Records*, vol. III, 1881, pp. 811-12).

162. The larynx and a portion of the trachea of a native male patient, aged 32, who died from pulmonary phthisis, but on whom the operation of tracheotomy had been performed in this hospital (by Professor Partridge) two and a half years previously, for the relief of laryngitis—probably tubercular.

The opening into the windpipe had not been allowed to heal, and the skin has cicatrised around it, so as to keep it permanently patent. In the interior of the larynx, the mucous membrane on the under surface of the epiglottis is thinned, but not ulcerated. The lower (true) vocal cords are yellowish, fibrous, wasted-looking. The aryteno-epiglottidean folds are a little œdematous.
(*Surgical Post-mortem Records*, vol. I, 1879, pp. 687-88.)

CONTINUATION TO SERIES IX.

INJURIES AND DISEASES OF THE TONGUE, TONSILS, PHARYNX, ŒSOPHAGUS, STOMACH, INTESTINES, PERITONEUM, LIVER, AND PANCREAS, &c.

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CIRRHOSIS OF THE LIVER, AND PERIHEPATIC ABSCESS, 382.

382. A highly cirrhotic (hob-nail) liver, weighing $41\frac{1}{2}$ ounces. The upper surface of the left lobe, for a space of about the size of the palm of the hand, is seen superficially ulcerated, shreddy, and undergoing disorganisation. At this spot an abscess had formed between the liver and diaphragm (perihepatic), and, perforating the latter, opened into the base of the left lung, and was in process of evacuation through the bronchi. The patient, a Hindu male, aged 27, was brought into hospital in a moribund condition,—passing copious melænic stools, and died 19 hours after admission.

(See further, *Medical Post-mortem Records*, vol. IV, 1881, pp. 39-40).

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INJURIES AND DISEASES OF THE SPLEEN, &c.

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THICKENING OF CAPSULE, 104.

AMYLOID OR ALBUMINOID INFILTRATION, 105.

104. Enormous thickening of the capsule of the spleen. Over the upper half of the convex (outer) surface of the organ it is as hard as bone, from $\frac{1}{5}$ " to $\frac{1}{3}$ " in thickness, and completely calcified. The splenic substance is soft, dull reddish-brown in colour; the trabecular structure throughout hypertrophied.

From a native male, aged 50, who died in hospital of chronic dysentery.
(*Medical Post-mortem Records*, vol. III, 1881, pp. 827-28.)

- 105.** Amyloid infiltration of the spleen. The organ is a little enlarged,—weighing $8\frac{1}{2}$ ozs.. The capsule is thickened and opaque in patches. The splenic substance is firm, has a reddish-brown colour, the Malpighian bodies are hypertrophied, prominent, semi-transparent, and glistening. The characteristic reaction with iodine-solution is given.

From a native male patient, aged 40, who died of chronic catarrhal phthisis. (*Medical Post-mortem Records*, vol. II, 1878, p. 700.)

CONTINUATION TO SERIES XII.

INJURIES AND DISEASES OF THE BLADDER URETHRA AND PROSTATE GLAND.

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RUPTURE OF THE BLADDER, 57.

- 57.** “Rupture of the bladder at the fundus. The rent is about an inch and a half in length. The peritoneum is opaque and greatly thickened.” (Ewart). No history.

Presented by Professor S. B. Partridge.

CONTINUATION TO SERIES XVI.

DISEASES OF THE ORGANS OF SPECIAL SENSE, AND OF THE SKIN.

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KELOID GROWTH FROM THE SKIN, 97.

- 97.** A keloid growth, of two years' duration, removed from the right deltoid region of a native male (Bengali), aged 18. It originated in the cicatrix left in the skin after the healing of a ringworm (*tinea circinata*) by the application of caustic lime mixed with clay. The structure is throughout fibroid, firm, glistening; consists of white fibrous tissue intermingled with a few elastic filaments.

Presented by Professor H. C. Cutcliffe.

ST GEORGE'S

ST GEORGE'S

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Amputation, stumps after, II. 150, p. 74; 182, p. 77. Casts Nos. 2, 3.

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